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**THE FIVE PREDICTORS OF WILLINGNESS TO COMMUNICATE IN THE
TURKISH CONTEXT: A META-ANALYSIS STUDY**

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DEDICATION

To my dear mother and family...



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Şafak UÇMAZ

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15.06.2022

ABSTRACT**THE FIVE PREDICTORS OF WILLINGNESS TO COMMUNICATE IN THE
TURKISH CONTEXT: A META-ANALYSIS STUDY****Şafak UÇMAZ****Master's Thesis, Department of English Language Education****Supervisor: Prof. Dr. Jülide İNÖZÜ****June 2022, 113 Pages**

This thesis has been prepared to examine willingness to communicate and its relationship with its five predictors. Relational meta-analysis was used as a research method in the study. Correlational master's theses and doctoral dissertations between WTC and anxiety, motivation, ideal L2 self, attitude, and ought-to L2 self were included in the scope of the research. In the literature research process, a sum of 12 correlations from 7 studies involving 5611 participants within the scope of anxiety, 11 correlations from 6 studies involving 5465 participants within the scope of motivation, 8 correlations from 5 studies involving 2787 participants within the scope of attitude, 10 independent correlations from 5 studies involving 4130 participants within the scope of ideal L2 self, and 8 independent correlations from 4 studies comprising 2708 participants within the scope of ought-to L2 self were included in the study. A sum of 11 studies and a sample of 20,701 people were reached. At the same time, moderator analysis was carried out within the scope of research design and publication type. Moreover, meta-regression tests were employed out for the publication year of the studies. According to the results of the research; It has been determined anxiety affects students' WTC negatively and moderately, motivation, attitude, and Ideal L2 self have a positive and moderate effect on students' WTC, and ought-to L2 self has a positive and small effect on

students' WTC. Publication type showed a moderator effect both for the anxiety and motivation variables. The research design showed a moderator effect only for the anxiety variable among the five variables. According to the meta-regression tests results, publication year did not significantly affect the distribution of studies. Finally, suggestions were presented for teachers, educators, and researchers within the scope of the findings.

Key words: meta-analysis, WTC, ideal L2 self, anxiety, motivation, attitude, ought-to L2 self.



ÖZ**TÜRKİYE BAĞLAMINDA İLETİŞİM KURMA İSTEĞİNİN BEŞ YORDAYICISI:****BİR META-ANALİZ ÇALIŞMASI****Şafak UÇMAZ****Yüksek Lisans Tezi, İngiliz Dili Eğitimi Anabilim Dalı****Tez Danışmanı: Prof. Dr. Jülide İNÖZÜ****Haziran 2022, 113 sayfa**

Bu tez, iletişim kurma isteğini ve bunun beş yordayıcısıyla ilişkisini incelemek için hazırlanmıştır. Araştırma meta-analiz yöntemi kullanılarak yapılmıştır. Yabancı Dil Eğitimi alanında, İngilizce iletişim kurma istekliliği ile kaygı, motivasyon, tutum, ideal yabancı dil benliği ve zorunlu yabancı dil benliği arasındaki ilişkisel yüksek lisans ve doktora tezleri araştırma kapsamına alınmıştır. Tarama sürecinde kaygı kapsamında 5611 katılımcıdan oluşan 7 çalışmadan toplam 12 bağımsız korelasyon, motivasyon kapsamında 5465 katılımcıdan oluşan 6 çalışmadan toplam 11 bağımsız korelasyon, tutum kapsamında 2787 katılımcıdan oluşan 5 çalışmadan toplam 8 bağımsız korelasyon, ideal yabancı dil benliği kapsamında 4130 katılımcıdan oluşan 5 çalışmadan toplam 10 bağımsız korelasyon ve zorunlu yabancı dil benliği kapsamında 2708 katılımcıdan oluşan 4 çalışmadan toplam 8 bağımsız korelasyon çalışmaya dahil edildi. Toplam 11 çalışma ile 20.701 kişilik bir örneklem grubuna ulaşıldı. Aynı zamanda araştırma tasarımı ve yayın türü kapsamında moderatör analizi yapılmıştır. Ayrıca çalışmaların yayınlandığı yıl için meta-regresyon testleri yapılmıştır. Araştırma sonucunda; Kaygının öğrencilerin İngilizce iletişim kurma istekleri üzerinde olumsuz ve orta, motivasyon, tutumu ve ideal yabancı dil benliğinin öğrencilerin İngilizce iletişim kurma istekleri üzerinde olumlu ve orta düzeyde bir etkisinin olduğu,

zorunlu yabancı dil benliğinin ise öğrencilerin konuşma istekliliği üzerinde olumlu ve küçük bir etkisinin olduğu belirlenmiştir. Yayın türü, hem kaygı hem de motivasyon değişkenleri için düzenleyici etki göstermiştir. Araştırma tasarımı, beş değişken arasında yalnızca kaygı değişkeni için düzenleyici bir etki göstermiştir. Meta-regresyon testleri sonucunda, yayın yılının çalışmaların dağılımına istatistiksel olarak anlamlı bir etkisinin olmadığı sonucuna varılmıştır. Son olarak bulgular kapsamında öğretmenlere, eğitimcilere ve araştırmacılara öneriler sunulmuştur.

Anahtar sözcükler: meta analiz, ideal yabancı dil benliği, İngilizce konuşma istekliliği, kaygı, tutum, zorunlu yabancı dil benliği, motivasyon

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ABBREVIATIONS

WTC :	: Willingness to Communicate
UnWTC:	: Unwillingness to Communicate
EFL:	: English as a Foreign Language
CMA:	: Comprehensive Meta-Analysis



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CHAPTER I

INTRODUCTION

The introduction chapter in this study firstly presents the importance of the WTC construct in second language learning. Moreover, this chapter clarifies the reason why the research method meta-analysis has been chosen to be employed for this study. Following this, statement of the problem, the purpose of the study, research question(s), and the significance of the study are provided. Lastly, the evolution of the WTC construct is thoroughly explained from the past to the present.

Background of the Study

English is a language that is at the center of the world and plays an important role in many different areas around the world today. Knowing English allows people to find opportunities in many fields such as tourism, education, technology, science, diplomacy and so on. Especially if your speaking skills are advanced and you can speak English fluently, more opportunities may come your way. Along with the importance of the communicative skills, in particular recent language learning pedagogy has shifted its focus to the use of the target language in second language learning. According to Myslihaka (2016), students who use the language in the classroom tend to increase their communication competencies. Moreover, MacIntyre et al. (1998) mention that “the ultimate goal of language learning: authentic communication between persons of different languages and cultural backgrounds” (p. 559). Based on these quotes, we can acknowledge the importance the ability to use the target language. Willingness to communicate (WTC) is one of the variables that affect students' speech. WTC indicates a person intention to talk in a communicative context. Moreover, WTC indicates how willing or unwilling a student is to communicate in and out of the classroom. When students have high WTC levels, they naturally are engaged which leads

to the active participation of students in speaking the target language. The underlying reason for this situation is the willingness to communicate. An increased L2 WTC will increase L2 development and better communication in various communication contexts (MacIntyre et al., 1998). Moreover, when students speak more in the target language, they tend to connect themselves more to the target community and visualize themselves as members of that community. In line with this, Norton explains the concept of “investment”. According to Norton (1995), investment means that when students talk, they begin to think about their place in the social world around them and begin to organize their sense of who they are. When students feel like they belong to the target community, there is a high chance that they will have a higher desire to speak in English, which can be desirable behavior.

Over the years, the importance of WTC on students' speaking ability has been recognized throughout the world and multiple studies have researched this construct in various learning contexts. Owing to the studies investigating WTC from different aspects, it has been understood that there are many factors predicting WTC. Various factors such as communication competence (Öz et al., 2015), emotional intelligence (Öz, 2015), attitudes (Yashima et al., 2004; Çetinkaya, 2005), motivation (Peng & Woodrow, 2010), L2 learning experience (Khajavy, et al., 2014), Anxiety (Pishghadam, 2016), ideal L2 self (Peng, 2012; Sak, 2020), communication apprehension (MacIntyre et al., 2002), international posture (Yashima, 2002), ought-to L2 self (Darling & Chanyoo, 2018), and so on have been widely researched in relation to the WTC construct.

In fact, a great number of studies have researched the WTC construct in Turkey (Altınar, 2018; Başöz & Erten, 2018; Cephe; Aydın, 2017; Çetinkaya, 2005; Kanat-Mutluoğlu, 2016; Öz et al., 2015; Zerey & Şener, 2014;). In these studies, the interrelationship among WTC and its variables has been investigated. In these individual studies, researchers make interpretations and generalizations with the data obtained from

these studies. At this point, the need to gather and evaluate the results obtained from the studies has emerged. As mentioned above, many studies have examined the interrelationship among WTC and related predictors. Since there is a lack of a comprehensive meta-analysis regarding the effect size of these studies, this study aims to examine the overall relationship between L2 WTC and its key variables affecting foreign language learning. For this reason, a meta-analysis study is preferred by the researcher. According to Borenstein et al. (2009), meta-analysis refers to a statistical combination of results from a set of studies. In addition, Glass (1976) mentions that he uses the term meta-analysis to refer “to the statistical analysis of a large collection of analysis results from individual studies for the purpose of integrating the findings” (p. 3). In a meta-analysis study, all studies related to the subject to be studied are found and larger data is obtained by combining the findings obtained from those studies. After reanalysis of these data, it is possible to reach a more general judgment. In other words, instead of making a general judgment as a result of studies conducted with small sample size, it is important to bring together studies with small samples and, as a result, to conduct research with a larger sample. In this direction, the meta-analysis research method can be used.

A relational meta-analysis (Kanadlı, 2019) will be employed because each of the studies to be combined are relational studies. In relational meta-analysis studies, the quantitative results of studies with correlational research designs on the same subject are brought together and the overall effect size is reached to learn the level of relationship between the predictors. Then, thanks to the effect size value obtained, the researchers make interpretations from a more general view.

Statement of the Problem

Many studies have underlined the significant role of WTC in learning English as a second language. It is also known from the literature that many factors affect a student's willingness to speak and the relationship of these factors with the willingness to speak has been discussed in many studies. However, the strength of the interrelationship among the WTC construct with its predictors has been rather contradictory among different studies.

In the Turkish context, a substantial number of correlational studies related to L2 WTC and the factors affecting it have been conducted (Başöz & Erten, 2018; Çetinkaya, 2005; Kanat-Mutluoğlu, 2016; Öz et al., 2015). This raises the question of how much influence the variables have on Turkish students' WTC. On the other hand, no studies in Turkish context have been found that extensively addresses the interrelationships among WTC and its predictors. To have a better understanding of the interrelationship among WTC and its underlying predictors, it is essential to examine the WTC structure more thoroughly. For this reason, a meta-analysis research design was adopted to reach a comprehensive understanding of the factors affecting students' WTC in the Turkish context. In line with this, the researcher will try to explore the following research question: What is the strength of the interrelationship among L2 WTC and anxiety, motivation, attitude, Ideal L2 self, and Ought-to L2 self? In the light of the information obtained, these five correlations from previous studies have been theoretically proposed and empirically proven to be the main influencers of WTC. Therefore, these five predictors of WTC were chosen to be investigated concerning their relationship with WTC.

Purpose of the Study

The primary argument in the study originates from a better understanding of the WTC phenomena in the Turkish context. There is a significant number of studies on the WTC construct in the Turkish context which investigated factors like anxiety, ideal L2 self, motivation, attitude, ought-to L2 self, and so on. Still, there is a need for a meta-analysis to comprehensively acknowledge the interrelationship among WTC and its variables. Therefore, a meta-analysis study will help the researcher to have a more general view of WTC and its variables.

In short, the present correlational meta-analysis study aims to examine the strength of the interrelationship among the Willingness to Communicate (WTC) of Turkish students learning English as a second language and the factors affecting it in the Turkish context. Since the study is a meta-analysis study, the researcher examines WTC in the context of Turkey with quantitative data collected from different correlational studies on the subject of WTC. In light of the aim mentioned above, the researcher is seeking an answer to the following research question(s)

- 1.) What is the strength of the relationship between L2 WTC and other variables of Anxiety, Motivation, Attitude, Ideal L2 Self, and Ought-to L2 Self?

Significance of the Study

The current research was conducted to review the studies that reveal the interrelationship among WTC and other variables of anxiety, ideal L2 self, motivation, attitude, and ought-to L2 self of students and to make a general judgment about these issues. Students' WTC is an important factor influencing their engagement to speak. It is believed that this study is important with regard to examining the effect of the predictors on students' WTC from a more comprehensive perspective and making a more general comment on the

subject. When more is known about the interrelationship among WTC and its predictors, education can be tailored accordingly, which in turn can positively affect students' WTC. This positive development may mean that students may be more willing to speak. Therefore, it is thought that this study, which deals with understanding the strength of the interrelationships among WTC and its variables with a comprehensive perspective, will be significant.

Another detail that makes the study significant is that the present study uses meta-analysis as a research method. Meta-analysis is the process of bringing together many individual studies' results (Gibbon, 1985) and making more general judgments with the results obtained.

According to Kavale (1983), meta-analysis offers important benefits over conventional research techniques. In addition, meta-analysis helps improve the accuracy of assessments of the intervention (Feuer & Higgins, 1999). Lately, combining individual studies and generalize from the results in the context of knowledge increase attracts attention because it may not always be possible for the results of individual studies to give an adequate answer about a subject. For this reason, it is believed that bringing the outcomes of the investigation together and commenting on the subject from a more general point of view will be a guide for both researchers and curriculum designers, and teachers.

Literature Review

The emergence of the WTC construct goes back to the native language (L1) communication research and was first proposed by Burgoon (1976) as UnWTC and was acknowledged as a stable personality characteristic. Later, McCroskey and Baer (1985) introduced willingness to communicate in L1 as a personality-based, trait-like concept, which is stable across various settings and receivers. According to McCroskey and Baer (1985), WTC was an individual's free decision to start or not to start communication. In this case, it

was stated that WTC is a complex structure in terms of individual differences (McCroskey & Richmond 1987). Since an individual's WTC disposition is controlled by that individual's personality, this propensity tends to be similar in different situations. In other words, many people talk more in some situations than others. In this respect, McCroskey and Baer (1985) claimed that WTC is a character quality in an individual's native language (L1) that clarifies why one individual would convey and the other would not under the equivalent or comparable conditions. Similarly, MacIntyre (1994) indicated that "WTC functions as a personality trait, showing stable individual differences over time and across situations" (p. 135) in the L1 context. It was proposed at those times that a person's tendency to speak changed from person to person and whether the situation changed or not, the WTC of a person would still be dependent on their personality trait.

In 1991, Sallinen-Kuparinen et al. examined the interrelationship among Finnish students' WTC, communication apprehension (CA), introversion, and self-perceived communication competence (SPCC). The results of the study were compared with previous research. In particular, they aimed to make comparisons between data obtained from Finnish students and data previously obtained from countries like the USA, Sweden, Australia, and Micronesia (McCroskey & Richmond, 1990). It was found from the study that CA, introversion, and SPCC considerably affect L1 WTC. The results of the study indicated that American learners had the highest level of WTC, on the other side, Micronesian students were least willing followed by Finnish students. The correlation among WTC and Personal Report of Communication Apprehension (PRCA) of Micronesians and Americans was medium and the same ($r = .52$). On the other hand, there was a large correlation between WTC and SPCC of Micronesians ($r = .80$). The correlations for the Finnish students WTC and PRCA and the WTC and SPCC were the lowest ($r = -.39$; $r = .41$). The correlations between WTC and CA of

different nations were moderate and very close to one another. The study also emphasized the importance of communication in relations among humans.

Another study conducted by MacIntyre (1994) used data from McCroskey and colleagues to explore the interrelationships between WTC and communication anxiety, anomie, alienation, introversion, self-esteem, and perceived competence. The researcher developed a model which he later used for L2 WTC research. According to this model (see Figure 1), communication apprehension and self-perceived communication competence were two variables that directly influenced a person's WTC. Namely, it showed that people will be more willing to communicate when they are less anxious and see themselves as competent communicators.

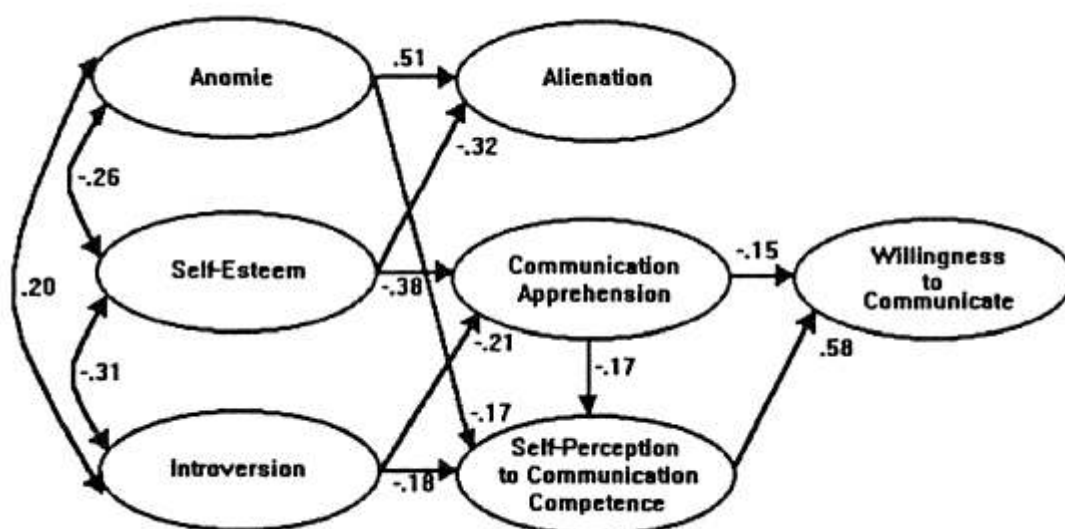


Figure 1. *The model of the interrelations of WTC and personality-based variables. Taken from MacIntyre (1994).*

In later studies, MacIntyre et al. (1999) investigated the state and trait-like WTC in L1. Extraversion, emotional stability, self-esteem, communication apprehension, and communication competence were the antecedents investigated. A conceptual model (see Figure 2) was developed showing the antecedent of WTC. The outcomes of the study are in

line with McCroskey and Richmond's (1987) study where self-esteem was predicted to affect WTC through communication apprehension. According to the study, communication apprehension and self-perceived communication competence were the most significant predictors of WTC. Moreover, there is also a direct pathway between CA and SPCC, which means individuals with high levels of anxiety think that they are more prone to feel like less skilled communicators. The results of the study also indicated that CA was not a significant predictor of WTC and that the path from SPCC to WTC was significant.

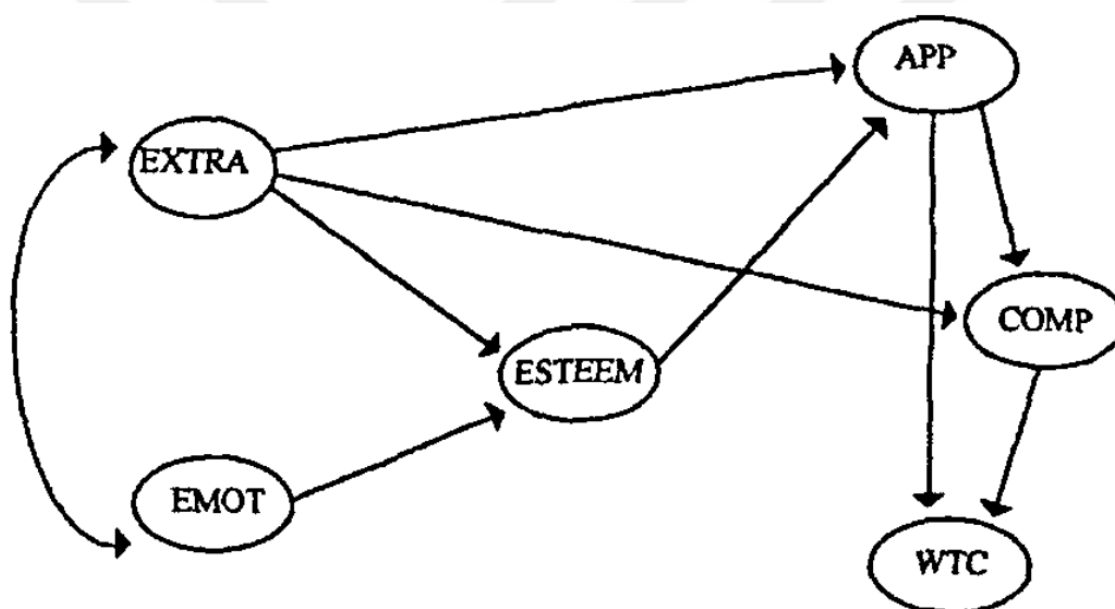


Figure 2. *The conceptual model. Taken from MacIntyre et al. (1999).*

Later, the phenomenon of WTC attracted the attention of researchers conducting studies on the L2 area. WTC was then used in L2 learning to learn more about the conditions that affect successful communication. At first, L2 WTC was taught to be a personality trait. At the time, L2 WTC was first investigated by MacIntyre and Charos in 1996. They presented a path model (see Figure 3) of L2 WTC in a study they conducted. The model included five personality traits including intellect, extraversion, agreeableness, emotional stability, and

conscientiousness. Moreover, they also included perceived competence, L2 anxiety, integrativeness, attitudes toward the learning situation, L2 WTC, motivation, and L2 communication frequency in the model shown in Figure 3 below. According to the study, perceived competence affects L2 communication frequency via the L2 WTC. Moreover, the personality traits affected the L2 WTC and motivation.

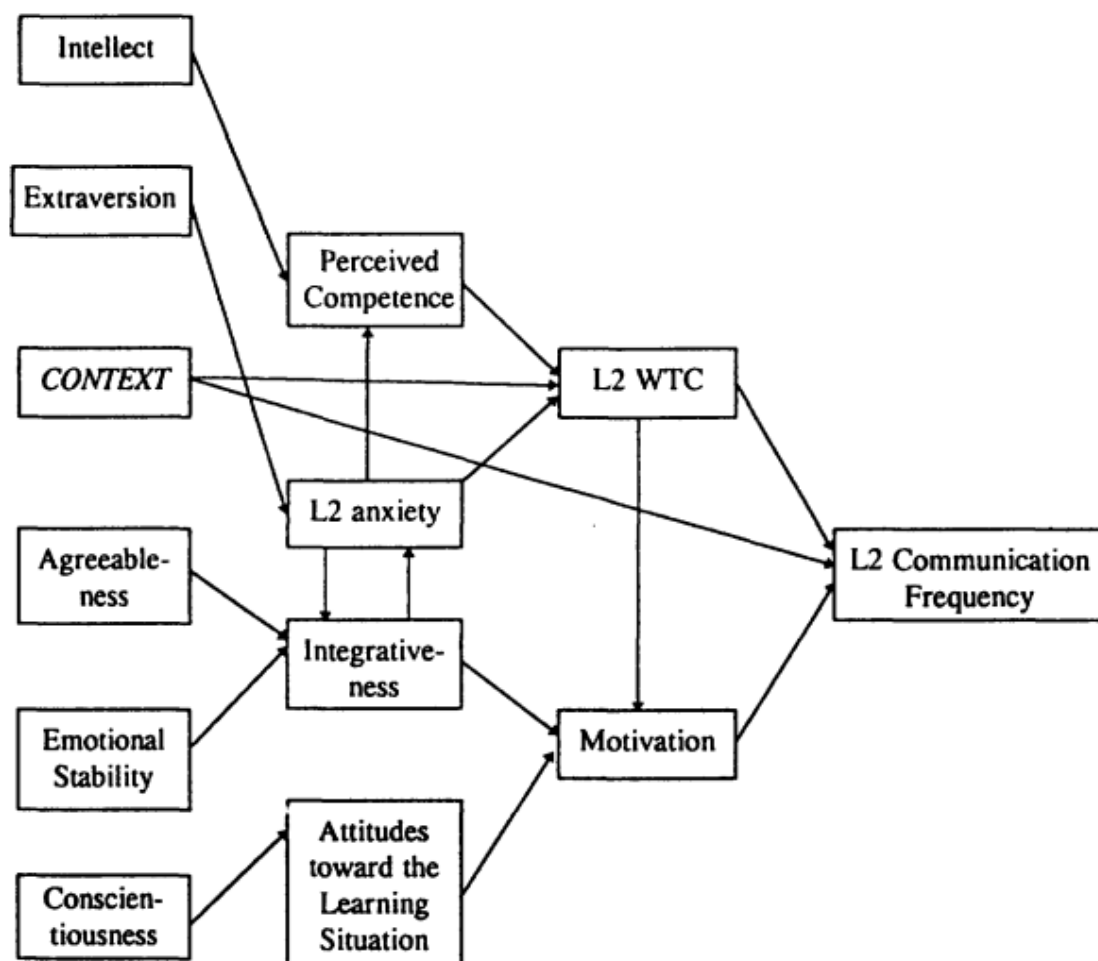


Figure 3. *The L2 WTC model. Taken from MacIntyre and Charos (1996).*

They tested the model to investigate the frequency with which 92 students who took introductory conversational French in adult evening classes used the second language in their daily interactions. They examined the effect of variables, such as L2 anxiety, perceived L2 competence, integrativeness, and attitudes toward the learning situation on the frequency of second language communication. The effect of personality traits was investigated as well. It

was found that perceived competence had a direct influence on the L2 communication frequency. Moreover, anxiety and perceived competence influenced WTC and it was also found that five personality traits such as intellect, extraversion, agreeableness, and conscientiousness affect WTC and thus communication frequency. It was also concluded that the willingness to communicate (WTC) model adapted well to the second language learning context.

WTC was defined in L2 by MacIntyre et al. (1998) "as a readiness to enter into discourse at a particular time with a specific person or persons, using a L2"(p. 547). According to Katsaris (2019), an individual's preference for communicating with other people relies on a variety of variables that may be pertinent to that particular situation or opportunity. Thus, WTC was perceived as a situational variable rather than a personality characteristic. The WTC model was broadened by MacIntyre et al. in 1998 as well.

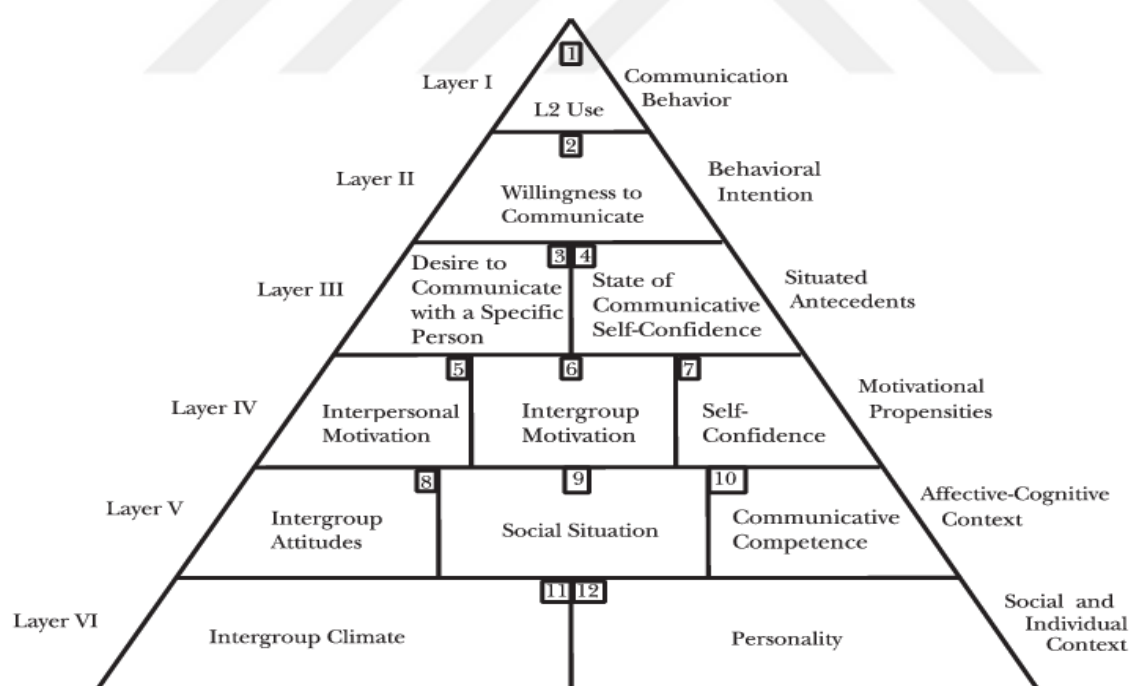


Figure 4. *Heuristic pyramid model of variables affecting WTC. Taken from MacIntyre et al. (1998).*

Unlike McCroskey and Baer who saw WTC as a personality trait-like construct, MacIntyre et al. (1998) conceptualized WTC as a situational disposition with both temporary and permanent effects. They stated that WTC should be viewed as a situational variable in the L2 context. It was proposed a person's tendency to speak might change across situations. The pyramid model was visualized by MacIntyre et al. (1998) showing the variables that influence each other in their multi-layer model. As can be seen from Figure 4 above, several factors affect the WTC of students'. Some of them are stable variables; whereas, others are more situation-based variables. Beneath the figure, there are the slow-changing and long-term effects of intergroup climate and personality in communication contexts. At the top of the pyramid, there are more short-term and specific events. Moreover, the pyramid closes with L2 use which can mean having an opportunity to speak. If we go more into detail, we can see that the first layer was communication behavior in the pyramid model. Communication can be seen as the main goal of the teaching and learning process in the pyramid. In the second layer, the WTC was placed and it can be seen as one of the most significant variables affecting communication behavior. It is also seen as a behavioral intention. The third layer was presented as a situation-based factor is the desire to communicate with a specific person and the state of communicative self-confidence. The fourth layer included the motivational propensities which were interpersonal motivation, intergroup motivation, and L2 self-confidence. The affective-cognitive context was the fifth layer, which included intergroup attitudes, social situations, and communicative competence. The sixth layer, which was the last layer, was social and individual context. In this layer intergroup, climate and personality were included. The different variables affecting the students' WTC differ from personality to self-confidence. These variables are all vital in the WTC of the students.

Indeed, there are several studies conducted in different parts of the world that show the validity of the heuristic model of WTC. Researchers from different countries, Çetinkaya and

Şener in Turkey (Çetinkaya, 2005; Şener, 2014); Wen and Clement in China (Wen & Clement, 2003), Yashima (Yashima, 2002) and Hashimoto (Hashimoto, 2002) in Japan, and Alavinia and Alikhani in Iran (Alavinia & Alikhani, 2014) investigated the WTC model in their countries. Their findings supported the variables in the heuristic model of WTC. Even though the many studies were done in various regions of the planet, they still shared common results which shows the validity of the heuristic model of WTC.

Regarding language education, it is argued by MacIntyre et al. (1998) that a precise goal of the learning process should be to ensure that language learner is ready to look for communication moments and have the ability to truly communicate them. MacIntyre et al. (1998) indicate that the objective of language learning ought to be on genuine communication between people. Moreover, according to Sirbu (2015), language is a tool for communication between members of a society. Therefore, students should be willing to communicate. Consequently, it is essential to encourage learners' Willingness to Communicate (WTC) while learning a new language. In other words, language teachers can increase students' willingness to communicate (WTC) level by maintaining the stability of communication both in the language classroom and outside the classroom. If students are more willing to communicate, they will be able to improve their speaking skills. Yashima et al. (2004) mention the necessity for students to utilize the language to improve communication skills. For this reason, the willingness to communicate (WTC) of the students is essential in contributing to the learners' communicative abilities.

MacIntyre et al. (2002), viewed WTC as a basic continuum that creates the tendency to be communicative or disconnected depending on the decision. Even though the freedom to convey the message will probably introduce itself, it does not necessarily mean having the WTC (MacIntyre et al., 1998). Regarding WTC in the second language teaching and learning, feeling free to speak can help students to speak more which will enhance their language

learning. Concerning the WTC levels of the students in the foreign language learning process, MacIntyre (2007) indicated that the eagerness to use the language shows the level of achievement in language learning. According to MacIntyre and Charos (1996), communication is linked to second language learning. The more students speak in the target language, the more their speaking skills will improve. Thus, they can communicate well with people in the target community. For students to improve their speaking skills, they need to have a high level of willingness to communicate (WTC). Consequently, exploring and understanding the WTC of learners' assume a significant part in looking at the learners' talking capacities.

Over the years, researchers have investigated L2 WTC using quantitative and qualitative methods (MacIntyre & Legatto 2011; Mystkowska-Wiertelak & Pawlak 2017; Pawlak et al. 2016; Peng, 2007). So far, researchers have focused more on the trait level or situational level of L2 WTC and correlated L2 WTC with variables like age, gender, personality, and so on. Nonetheless, the focus has now changed. At first, WTC was considered as a personality feature; however, it has recently evolved into a dynamic phenomenon that changes within different communicative events (MacIntyre & Legatto, 2011). In this sense, the WTC level of students' is now seen as a dynamic process that can fluctuate over a time scale. A student's WTC level may increase or decrease during different communicative tasks and events. One moment the student may feel very eager to speak; whereas, in another moment s/he may feel very reluctant to speak (MacIntyre, 2020). This change in the WTC levels of the students can be affected by numerous factors including context, motivation, interlocutors, and so on. Since WTC has a dynamic component, the new investigations on WTC have changed their shift towards researching WTC from a Complex Dynamic Systems Theory (CDST) (Larsen-Freeman and Cameron, 2008). The main characteristic of this theory is that change occurs over time (De Bot et al., 2007). As per De

Bot et al. (2007), Complex Dynamic Systems Theory (CDST) investigates components in the frameworks with respect to their interconnectedness and their external relationship to their environment. Language classrooms can be seen as a system that has a lot of different elements that are interconnected to one another. In this manner, CDST theory can show us the complexity of learning a foreign language. The theory brings together a multitude of interacting factors within the complex system of language learning and language use (Ellis, 2007). First of all, dynamic systems treat each event that happens in the system together with the previous state, and successive states have an effect on each other (MacIntyre, 2012). Moreover, complex and dynamic systems are interconnected. Therefore, if there is a change in the elements in the system, this change also affects other elements in the system (MacIntyre 2012). According to MacIntyre and Legatto (2011), there is also a nonlinear structure in Complex Dynamic Systems. In this regard, investigating WTC from a Complex Dynamic Systems viewpoint will assist the researcher with figuring out communication events from a alternate point of view.

Meta-Analysis

There are various definitions made by researchers about meta-analysis. Meta-analysis was first introduced by Glass in 1976. Glass (1976) alluded to meta-analysis as the “analysis of analysis” (p. 3). He further makes sense of meta-analysis as a factual technique used to consolidate investigation results got from individual research to reach general determinations (1976). According to, Field and Gillett (2010), meta-Analysis is a statistical instrument for assessing the mean and variance of the population impacts from an accumulation of studies tending to a similar exploration question. In this sense, it can be concluded that meta-analysis consists of forming ideas by bringing together different individual studies, estimating the effects of a particular subject, and as a result, reaching general conclusions on those subjects.

Meta-analysis is attributed to the quantitative process used to statistically combine the outcomes of various studies on the same or similar issues (Card, 2012; Cooper, 2010; Cumming, 2013). Moreover, meta-analysis has become an important part of contemporary science in different fields (Aksoy Kürü, 2021; Rosenthal & DiMatteo, 2001). With this in mind, it is sensible that scientists understand the importance of synthesizing past academic knowledge with new ones. In this regard, the importance of the cumulative scientific process emerges. Moreover, Rosenthal and DiMatteo (2001) indicated that meta-analysis enables investigators to draw more accurate and more reliable conclusions. As a result, researchers are able to produce more reliable results by combining past and new scientific information. That's why researchers are starting to show more interest in meta-analysis in different fields of science.

As reported by Littell et al. (2008), meta-analysis aims to create a brief empirical knowledge on a given subject by uniting the quantitative results gathered from numerous studies. Considering the definitions of meta-analysis, studies in the field of Social Sciences may come to mind. Since these studies were conducted with relatively small samples, a meta-analysis might be a decent choice to unite the results of these studies to arrive at general conclusions. In addition, there are many studies published in many different fields on a particular subject. Therefore, a meta-analysis will help to synthesize the outcomes of these studies to produce general knowledge about a particular topic.

According to the Rosenthal and DiMatteo (2001), the stages of a meta-analysis are as follows:

- Describe dependent and independent variables of interest.
- Collect the studies in an orderly way, and read their method and results very attentively.

- Investigate heterogeneity between the obtained effect sizes by graphs and charts or the chi-square test.
- Unite the effect sizes gathered from the individual studies using the measures of central tendency like weighted means.
- Investigate the significance level of the indices of central tendency.
- Assess the significance of the gathered effect size.

Limitations

Even though the present study will give recent and significant information about the interrelationship among the WTC construct and its predictors in the Turkish context, it has some limitation(s).

1. The present meta-analysis research is limited to studies that meet the inclusion criteria.
2. Since the study is aiming to investigate the WTC phenomena in the Turkish context, only the studies conducted in Turkey is selected (see the inclusion and exclusion criteria in the methodology section).
3. The information in the coding form used for this study are limited to the information reported in the studies included in the meta-analysis.

CHAPTER II

METHODOLOGY

Research Design

The study aims to examine the five predictors of WTC phenomena in the Turkish context. Therefore, the meta-analysis method, which is one of the research synthesis methods, was used. Meta-analysis refers to procedures used to synthesize the results acquired from individual studies. Present study followed the stages of a meta-analysis proposed by Cooper (2010). According to Cooper (2010 as cited in Ergen & Kanadlı, 2017), the stages of a meta-analysis are as follows:

Step 1: Formulating the problem

Step 2: Searching the literature

Step 3: Gathering information from studies

Step 4: Evaluating the quality of studies

Step 5: Analyzing and integrating the outcomes of studies

Step 6: Presenting the results

Literature Research Procedure

Within the scope of the present study, master's and doctoral theses on the five factors (anxiety, motivation, ideal L2 self, attitude, ought-to L2 self) affecting WTC in Turkey constitute the main data source of this research. In the light of this purpose, the National Theses Center of Turkey (YÖK) database, which contains all the master's and doctoral theses made in Turkey, was scanned and the studies to be included in this meta-analysis study were collected from this database. In the literature review process, studies involving statements

such as “WTC”, “WTC and Anxiety”, “WTC and Motivation”, “WTC and Attitude”, “WTC and Ideal L2 Self”, “WTC and Ought-to L2 Self” were collected from the YÖK Theses Center.

From this database, 27 studies were found to be suitable for the study; however, only 11 of them were selected for inclusion in this study according to the inclusion-exclusion criteria.

Criteria for Inclusion

Deciding on what criteria to be set in a meta-analysis is an important part of the research. Inclusion criteria are statements about the characteristics of studies to be involved in the meta-analysis (Card, 2012).

The criteria for inclusion in the current research are as follows:

- Studies conducted in English.
- MA theses, Ph.D. theses.
- Studies done about the relationship between WTC and its five predictors (Anxiety, Ideal L2 Self, Motivation, Attitude, and Ought-to L2 Self) in EFL.
- Studies carried out between the years 2014 and 2021 in Turkey. The year 2014 is the year when the first study about WTC was published and the year 2021 is the date this study was started to be written by the researcher. Therefore, the studies done between 2014 and 2021 were set as criteria.
- Studies done with correlational research design.
- Studies having statistical data as sample sizes, Pearson's r .

Criteria for Exclusion

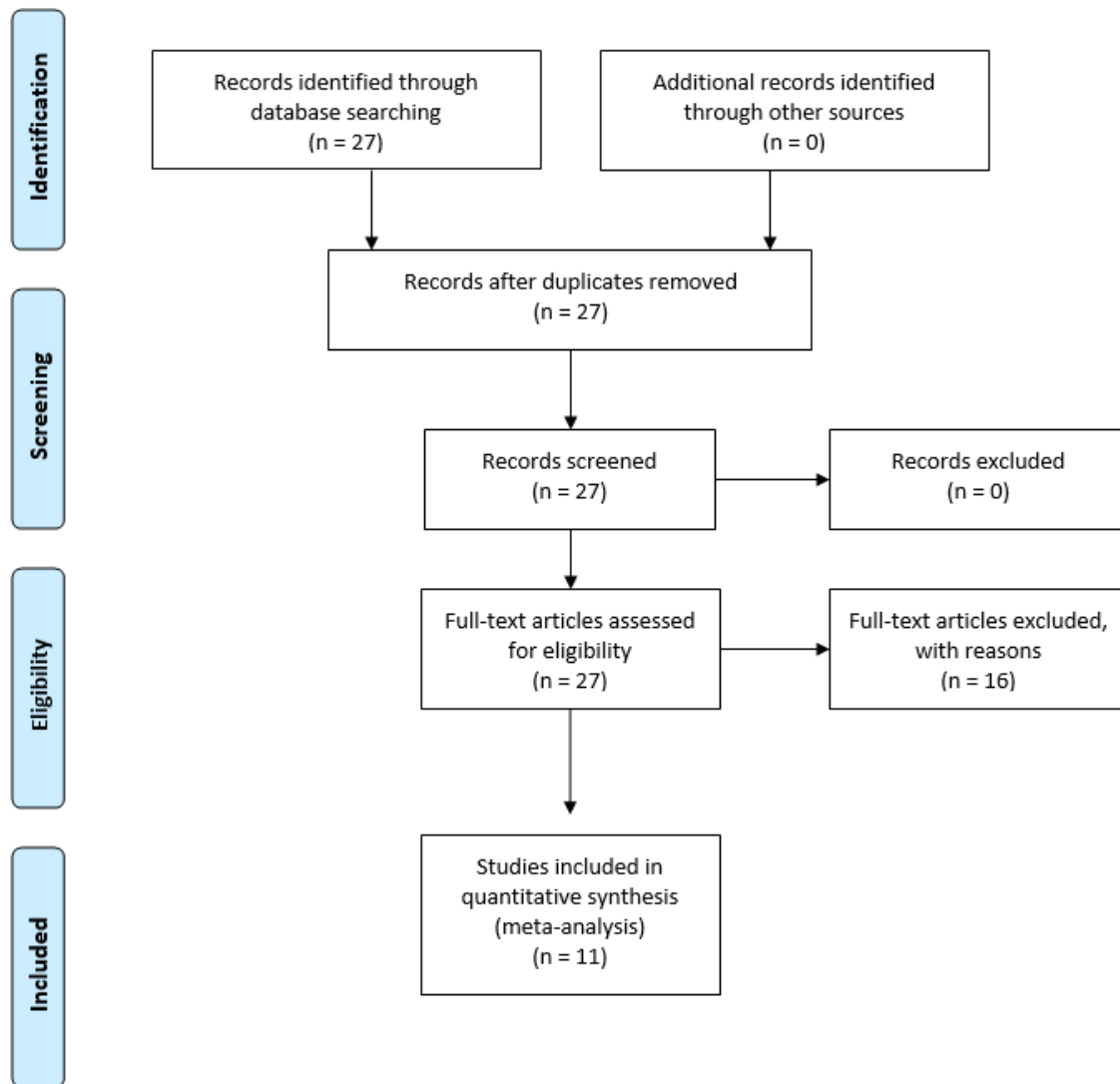
The criteria for exclusion in the present study are as follows:

- Studies in Turkish.

- Studies without statistical data to calculate the correlational effect size value.

Phases of literature research and inclusion of studies in the present meta-analysis are illustrated in Figure 5 below.

Figure 5. *Flow Diagram (PRISMA, 2009) of Literature Research and Inclusion of Individual Studies.*



After a comprehensive literature research, 27 studies were reached by YÖK Theses Center. A detailed review of studies found 11 studies suitable for inclusion in the present study. Six of the remaining studies were experimental, one included non-parametric data, and nine of them

did not have the necessary data for this meta-analysis, so they were excluded from this study.

Since individual studies are the main source of data for the meta-analysis, the included master's theses and doctoral dissertations are marked with an asterisk (*) in the references section indicating that they are part of the meta-analysis.

Coding

To gather information on the studies included in this meta-analysis study, a coding form (Appendix C) was created to determine the scope of primary studies on the interrelationship among the five predictors and WTC at the beginning of the research. The characteristics of the studies that were later decided to be included in the analysis were coded in this form. The data entered in the coding form was checked by the researcher and the thesis advisor to prevent possible errors during the coding process and later in data entry. As it is presented (see Appendix C), individual studies ($k=11$) were coded with the titles below: Author, Name of the Study, Publication Year, Publication Type, Research Design, School Level, Sample Size, and Statistical Findings (sample size, standard deviation, correlational r value).

Coding Reliability

Coding reliability is one of the most significant parts of a meta-analysis. There are two components of coding reliability. The first one is the coherence of coding by a single coder from research to research and the second one is the coherence between divergent coders (Lipsey & Wilson, 2001). According to Lipsey and Wilson (2001) in meta-analyses containing few studies, all individual studies should be included in the coding reliability process. Therefore, in this study, all of the studies ($k= 11$) were coded by the researcher himself and another researcher for inter-coder reliability. "Agreement rate" (AR) was

calculated for both of the researchers' coding sheets. The “AR” calculation in this study is shown in the formula below (Miles & Huberman, 1994):

Inter-coder reliability formula

$$\text{reliability} = \frac{\text{number of agreements}}{\text{total number of agreements + disagreements}}$$

An average AR of 0.98 was obtained with a range from 0.87 to 1.00. According to Miles and Hiberman (1994), a consensus rate close to 80% is considered sufficient for coding reliability. Judging by that, it can be assumed that coding reliability is quite high (0.98). The calculations of coding reliability are given in a table in Appendix D.

Data Analysis

In the procedure of synthesizing and examining the studies included in the meta-analysis, the effect size is used in order to arrive at a common denominator. In addition, the effect size is fundamental to meta-analysis. According to Card (2012), effect sizes are the most significant data that you can excerpt from a study included in a meta-analysis. When calculating the effect sizes of individual studies, different measures of effect sizes such as Hedges *g*, Cohen's *d*, Pearson's *r*, and Fisher's *Z* can be used. In the present study, the researcher's goal is to examine the interrelationship among WTC and its five predictors. For that reason, a correlational meta-analysis will be utilized in the present study. While investigating the relationship, effect sizes are calculated as Pearson's *r* and take a value between 0 and 1. According to Cohen's (1988) classification, an *r* between 0.1 and 0.3 is considered "small", between 0.3 and 0.5 "medium", and 0.5 or more "large" effect size (p. 82). However, in literature, it is recommended to calculate the effect size of relational studies

as Fisher's Z and later convert it to Pearson's r due to some abnormal distribution among relational studies (Cohen, 1998) with r -values above 0.25. Therefore, the effect sizes for each factor in the present study were first calculated as Fisher's Z , then converted to Pearson's r and reported. Effect size conversions from Fisher's Z to Pearson's r are shown in Appendix A.

In meta-analysis studies, two models (fixed and random effects models) stand out and are popular while calculating the common effect size of the studies included. The first one is the fixed-effect model where it is accepted that there is a single true effect size for all studies included in the study (Borenstein et al., 2010) and that these studies are homogeneous. It is also assumed that the studies in the fixed effects model have the same population. Therefore, the effect sizes of these studies are the same. After testing for heterogeneity, if studies are homogeneously distributed, a fixed-effects model is used for future analysis.

Another method to be used in meta-analysis is the random-effects model. In the random-effects model, it is accepted that the genuine effect size can vary from study to study due to differences in populations in the individual studies. Therefore, if the populations of the studies which is heterogeneous and the study aims to reach general conclusions, the random-effects model should be used (Borenstein et al., 2009). Moreover, Random Effects Model is used in cases where the population sizes of individual studies are different and the standard deviation is not equal to zero. In Social Sciences, the populations of individual studies differ from study to study. This variation in populations indicates that there will not be a single true effect size. Moreover, the effect size for each of the studies included in the meta-analysis should be calculated. Therefore, within the context of the present study, the Random Effects Model was found appropriate to be selected for the present study. There is much debate about which model should be preferred. Therefore, the heterogeneity test is applied to decide on which model to be selected for future analysis. Heterogeneity in meta-analysis is defined by Higgins (2008) "as the presence of variation in true effect sizes underlying the different

studies” (p.1158). If the result of the heterogeneity test is significant at the 95% level ($p < 0.05$), the effect size is considered heterogeneous and the Random Effects Model is used in model selection. If the results of the test are not significant at the 95% level, it is concluded that the effect sizes are homogeneous and the Fixed Effects Model is preferred (Kanadlı, 2019, p.24). Another way to decide on what model to use in a meta-analysis is by calculating the Cochran’s Q value (Cochran, 1950). By calculating the Q value, its corresponding value in the chi-square (X^2) table (Appendix B) is found. If the Q value corresponding to the df value is less than the value in the table ($Q < X^2$), the Fixed Effects Model, and if it is greater than the value in the table ($Q > X^2$), the Random Effects Model is selected (Kanadlı, 2019, p.24). In this study, heterogeneity tests for each predictor were significant (see the findings section below); therefore, the Random Effects Model was employed.

Publication Bias

Meta-analyses can provide statistically accurate results by synthesizing the studies related to a certain topic (Borenstein et al., 2009). Nevertheless, publication bias poses a threat to meta-analysis research (Card, 2012). There may be multiple factors that can cause publication bias. Some of these may be studies with small samples, or not publishing studies with non-significant results. According to Card (2012), in order to reduce the effect of publication bias, it is necessary to determine the studies to be included in the study as a result of comprehensive research of the literature.

In the literature, it is recommended to use many methods simultaneously to address publication bias because each method has its strengths and weaknesses. In the present meta-analysis study, a Funnel plot, Duval and Tweedie’s Trim and Fill test (Duval & Tweedie, 2000), Egger’s Test of the Intercept (Egger et al., 1997), and Rosenthal’s Fail-Safe N Test (Rosenthal, 1979) are the methods used to evaluate publication bias. These tests were preferred in order to comprehensively determine whether there is publication bias or not.

Software Used in Meta-Analysis

For the meta-analysis, package programs such as SPSS, Comprehensive Meta-Analysis (CMA), R programming, and Microsoft Excel can be used. During the meta-analysis process, it is critical to calculate the effect size, choose the appropriate model, run statistical analyzes such as moderator analyses, meta-regression, or heterogeneity tests, analyze publication bias, and generate funnel and forest plots. In line with these matters, CMA was preferred to be used because it is easy to use. In addition, Microsoft Excel was used for the coding process.



CHAPTER III

FINDINGS

In this section, the descriptive statistics of the studies included in the study are shown. Subsequently the Heterogeneity Test was applied to determine whether there is heterogeneity among studies and if so, its' size. The Fisher's Z values obtained as a result of combining the data on each of the factors affecting the WTC with the meta-analysis method and their interpretations are included. In addition, the Fisher's Z values of the data related to each factor of WTC are presented by calculating with a forest plot. Moreover, categorical moderator analysis and meta-regression tests were applied to uncover the causes of possible heterogeneity. Whether there is publication bias in the calculations in the results of the analysis was checked using the Funnel Plot, Duval and Tweedie's Trim and Fill (Duval & Tweedie, 2000), Egger's Test of the Intercept (Egger et al., 1997), and Rosenthal's Fail-safe N (Rosenthal, 1979).

Descriptive Statistics

A sum of 11 studies is listed in the meta-analysis. The descriptive statistics of studies involved in this study are presented in Table 1 below. All the studies %100 ($f=11$) are conducted in a university context. Likewise, all of the studies %100 ($f=11$) are done with a correlational research design and are written in English.

The year of the study indicates the year in which the study was published. This study aims to cover all completed English theses or doctoral dissertations on factors affecting WTC in the Turkish setting. The first English study on WTC was published in 2014. Since the year of this study was 2021, all studies between 2014 and 2021 were included in this meta-analysis. With %27.27 ($f=3$), 2017 and 2018 were the years in which most studies were conducted on factors affecting WTC.

Theses and dissertations are the two study types included in the study. %36.36 ($f=4$) of the studies included in this study were theses, whereas %63.63 ($f=7$) of the studies are Ph.D. dissertations. The reason why master theses and doctoral dissertations were included is that it was thought that theses and dissertations would give sufficient data to investigate the variables affecting L2 WTC in the Turkish context. Therefore, articles were not added to the present study.

Table 1.

Descriptive Statistics of the Studies Included in the Study.

School level	Frequency	Percent
University	11	100
Total	11	100
Design of the study	Frequency	
Correlational Studies	11	100
Total	11	100
Year	Frequency	Percent
2014	1	9.09
2017	3	27.27
2018	3	27.27
2019	2	18.18
2020	1	9.09
2021	1	9.09
Total	11	100
Type of the Study	Frequency	Percent
Ph. D. Dissertation	4	36.36
M.A Thesis	7	63.63
Total	11	100
Research Design	Frequency	
Mixed-Method	6	54.54
Quantitative	5	45.45
Total	11	100

Test of Heterogeneity for WTC and Anxiety, Motivation, Attitude, Ideal L2 Self, and Ought-to L2 Self

To decide whether there is heterogeneity among the studies involved in the meta-analysis and, if so, its size, the heterogeneity test was applied for each variable.

Table 2.

Number, Point Estimate, Standard Error, Confidence Interval, and Heterogeneity, According to Random-Effect Model of Studies.

Variable	N	Point Estimate	Std. Error	%95 Interval		Heterogeneity			
				Lower Limit	Upper Limit	Q	df	P	I ²
Anxiety	12	-0.308	0.047	-0.400	-0.217	128.957	11	0.000	91.470
Motivation	11	0.376	0.077	0.226	0.527	451.784	10	0.000	97.787
Attitude	8	0.318	0.088	0.144	0.491	144.398	7	0.000	95.152
Ideal L2 Self	10	0.492	0.047	0.399	0.584	77.001	9	0.000	88.312
Ought-to L2 Self	8	0.074	0.039	-0.002	0.151	25.798	7	0.001	72.866

Test of heterogeneity for the effect sizes (see Table 2) is found to be significant within the strong range ($Q = 128.957, 451.784, 144.398, 77.001, 25.798$; $p < .000$). The Q value for each variable exceeds the critical values ($p < 0.05$) in the chi-square table with the degrees of freedom (df) and confidence intervals of 95%. Heterogeneity within studies indicates that moderator variables can explain variance. Thus, categorical moderator analysis and meta-regression were needed to identify the variables that cause heterogeneity.

Findings on Willingness to Communicate and Anxiety

An amount of 12 correlations from 7 studies involving 5611 participants were examined regarding the predictor language anxiety (see Table 3 below).

Table 3.

Independent correlations between L2 WTC and Anxiety.

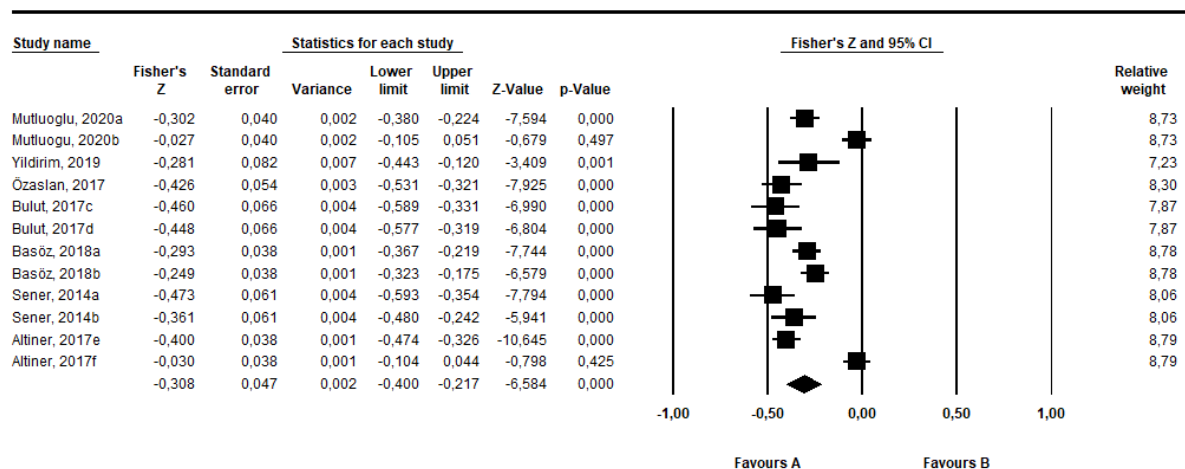
Author	Year	Sample Size	Publication	Measured Outcome	Correlation	Direction
Mutluoğlu (WTC-inside)	2020	636	Ph.D. Dissertation	Anxiety	-0.293	Negative
Mutluoğlu (WTC outside)	2020	636	Ph.D. Dissertation	Anxiety	-0.027	Negative
Yıldırım	2019	150	MA Thesis	Anxiety	-0.274	Negative
Özaslan	2017	349	MA Thesis	Anxiety	-0.402	Negative
Bulut (WTC with friends)	2017	234	MA Thesis	Anxiety	-0.430	Negative
Bulut (WTC with foreigners)	2017	234	MA Thesis	Anxiety	-0.420	Negative
Başöz (WTC inside)	2018	701	Ph.D. Dissertation	Anxiety	-0.285	Negative
Başöz (WTC outside)	2018	701	Ph.D. Dissertation	Anxiety	-0.244	Negative
Şener (WTC inside)	2014	274	Ph.D. Dissertation	Anxiety	-0.441	Negative
Şener (WTC outside)	2014	274	Ph.D. Dissertation	Anxiety	-0.346	Negative
Altınır (WTC in meaning-based activities)	2017	711	Ph.D. Dissertation	Anxiety	-0.380	Negative
Altınır (WTC in form-based activities)	2017	711	Ph.D. Dissertation	Anxiety	-0.030	Negative

As seen in the table above. Two independent correlations were obtained from some studies. This is because Willingness to Communicate has different dimensions. Since WTC in the classroom is handled in the literature as something different from the WTC outside, this path has been followed. Therefore, multiple independent correlations were obtained from some studies that looked at WTC from different perspectives. This application was also made for other factors in this study.

In Figure 6 below, the summary of study results is presented in a forest plot showing Fisher's Z-score (indicated by a diamond) for the correlation between L2 WTC and Anxiety is $-.308$, 95% CI $[-.40 \text{ to } -.217]$, $p < 0.05$. When we convert Fisher's Z to Pearson's r as proposed by Borenstein et al. (2009), it can be seen that the r is -0.299 which shows a *medium* and *negative* correlation between L2 WTC and Anxiety according to Cohen's (1988) classification. In addition, study weights for each study were involved in this meta-analysis. It can be observed that each of the study weights is close to one another. As a result, 10 out of 12 independent correlational results in the study are statistically significant ($p < .005$) and aggregate between 0 and -0.5 . There are only two independent correlations below -0.10 . It can be concluded from these two studies that anxiety have *small* and *negative* correlation with L2 WTC. However, the results of these two studies are not statistically significant ($p > .005$). Apart from that all of the other independent correlations show a *medium* correlation and are statistically significant ($p < .005$).

Figure 6. Meta analysis results of the correlation between L2 WTC and Anxiety. The Fisher's Z-score is displayed by a diamond. Note 1: a = WTC inside; b = WTC outside in Mutluoglu, 2020; Basöz, 2018; Sener, 2014. Note 2: c = WTC with friends; d = WTC with foreigners. Note 3: e = WTC in meaning-based activities; f = WTC in form-based activities.

Meta Analysis



Moderator Analysis and Meta-Regression for L2 WTC and Anxiety

All of the studies used in the research were carried out in the context of the university. In addition, all of the studies were relational studies and all were conducted in the context of Turkey, therefore, the type of publication (MA Thesis and Doctoral Dissertation) and research design (Mixed-Method and Quantitative) were taken into account for the moderator analysis (see Table 4). On the other hand, publication years were taken into account for meta-regression.

Table 4.

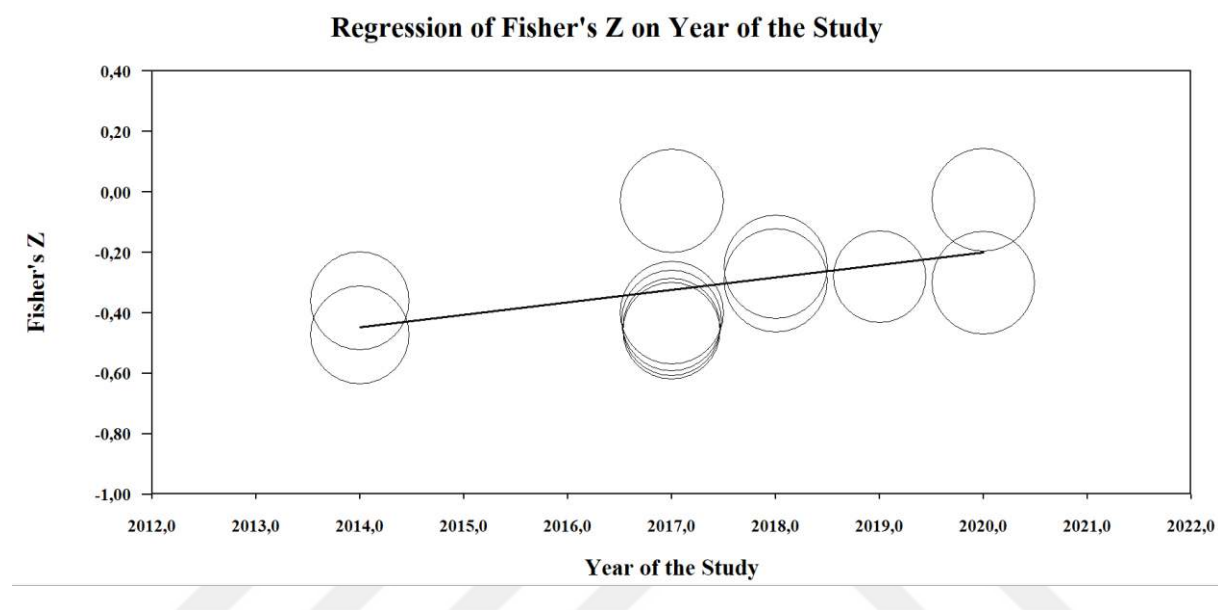
Moderator Analysis of L2 WTC and Anxiety.

Moderator Name	k	Point Estimate	95% CI.		Z-value	P-value	Q	Heterogeneity	
			Lower Lim.	Upper Lim.				df	p
Publication Type	12	-.385	-.407	-.307	-12.701	0.000	5.265	1	0.022
MA Theses	4	-.394	-.449	-.335	-12.035	0.000			
Doctoral Dissertations	8	-.258	-.358	-.152	-4.662	0.000			
Research Design	11	-.387	-.445	-.330	-13.244	0.000	7.763	1	0.005
Mixed-Method	9	-.265	-.369	-.162	-5.038	0.000			
Quantitative	3	-.442	-.511	-.373	-12.561	0.000			

As can be seen in Table 4., according to the consequences of the categorical moderator analysis, it can be said that both the category of publication type ($p < 0.05$) and research design ($p < 0.05$) are significant moderators contributing to heterogeneity. That is to say, the interrelation between L2 WTC and Anxiety differs significantly according to the type of publication and research design.

Another method to identify the reason for heterogeneity is doing a meta-regression test. Therefore, in the current meta-analysis study, a meta-regression analysis (see Figure 7 and Table 5 below) was conducted to determine the change of effect sizes of the correlation between L2 WTC and Anxiety according to years.

Figure 7. *The Relationship Between Effect Size and Publication Years.*



According to this test, it is seen that there is a linear relationship between publication years and effect sizes. In other words, it has been observed that the effect size has increased linearly over the years, which means that the relationship between students' Anxiety and WTC has developed positively until today. The statistical outcomes of this test are given in Table 5 below.

Table 5.

Findings on the Relationship Between Effect Size and Publication Years.

	Coefficient	Standard Error	Lower Limit	Upper Limit	Z-score	p
Publication Year	0.041	0.023	-0.005	0.088	1.73	0.084
Intercept	-83.676	48.303	-178.348	10.995	-1.73	0.083

According to Table 5, it is seen that the regression coefficient is 0.041. This shows a one-unit increase in the year of publication, resulting in an increase of 0.041 in the effect size. However, the increase in this effect size value was not statistically significant ($p > 0.05$).

Findings on Willingness to Communicate and Motivation

A sum of 11 correlations from 6 studies involving 5465 participants were examined regarding the predictor language motivation (Table 6 below).



Table 6.

Independent correlations between L2 WTC and Motivation.

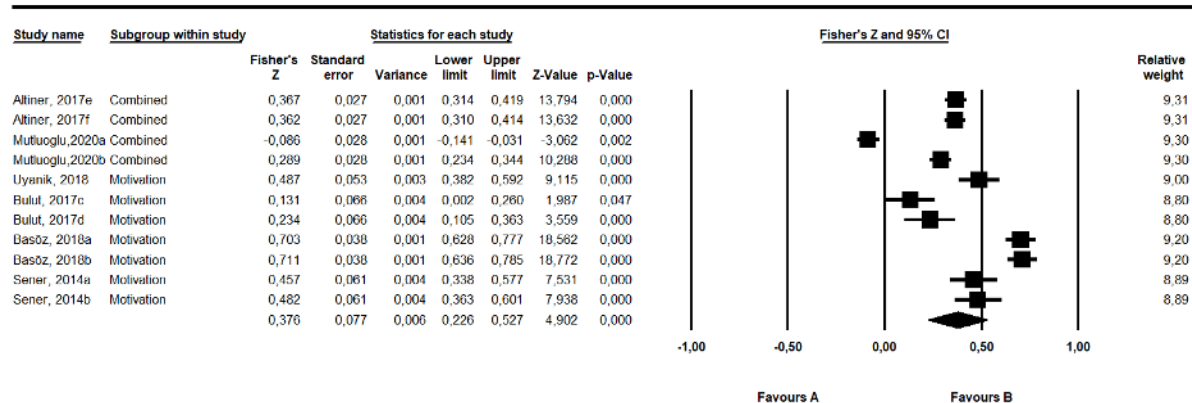
Author	Year	Sample Size	Publication	Measured Outcome	Correlation	Direction
*Mutluoğlu (WTC inside)	2020	636	Ph.D. Dissertation	Motivation	-0.086	Negative
Mutluoğlu (WTC outside)	2020	636	Ph.D. Dissertation	Motivation	0.281	Positive
*Bulut (WTC with friends)	2017	234	MA Thesis	Motivation	0.130	Positive
Bulut (WTC with foreigners)	2017	234	MA Thesis	Motivation	0.230	Positive
*Başöz (WTC inside)	2018	701	Ph.D. Dissertation	Motivation	0.606	Positive
Başöz (WTC outside)	2018	701	Ph.D. Dissertation	Motivation	0.611	Positive
*Şener (WTC inside)	2014	274	Ph.D. Dissertation	Motivation	0.428	Positive
Şener (WTC outside)	2014	274	Ph.D. Dissertation	Motivation	0.448	Positive
*Altınır (WTC in meaning-based activities)	2017	711	Ph.D. Dissertation	Motivation	0.351	Positive
*Altınır (WTC in form-based activities)	2017	711	Ph.D. Dissertation	Motivation	0.347	Positive
*Uyanık	2018	353	MA Thesis	Motivation	0.452	Positive

In Figure 8 below, the summary of study results is presented in a forest plot showing Fisher's Z-score (indicated by a diamond) for L2 WTC and Motivation correlation is .376, 95% CI [–.226 to .527], $p < 0.05$. When Fisher's Z is converted to Pearson's r as proposed by Borenstein et al. (2009), it can be seen that the r is 0.359 which shows a *medium* and *positive* correlation between L2 WTC and Motivation according to Cohen's (1988) classification. As a result, 12

out of 12 (%100) independent correlational results in the study are statistically significant ($p < .005$). Three independent correlations aggregate between .10 and .30 which shows that the correlation among L2 WTC and Motivation in those results is *small* and *positive*. In the study carried out by Başöz (2018), the correlational results ($r = .611$ and $.606$) showed that there is *large* and *positive* correlation between L2 WTC and Motivation (Cohen, 1988). In contrast, in the study of Mutluoğlu (2020), one independent correlational result showed a negative correlation ($r = -0.086$) between L2 WTC and Motivation.

Figure 8. *Meta analysis results of the correlation between L2 WTC and Motivation. The Fisher's Z-score is displayed by a diamond. Note 1: "Combined" refers to combined correlational results for intrinsic and extrinsic motivation in Mutluoğlu, 2020 and Altiner 2017. Note 2: a = WTC inside; b = WTC outside in Mutluoğlu, 2020; Başöz, 2018; Sener, 2014. Note 3: c = WTC with friends; d= WTC with foreigners. Note 4: e= WTC in meaning-based activities; f= WTC in form-based activities.*

Meta Analysis



Moderator Analysis and Meta-Regression for L2 WTC and Motivation

All of the studies used in the research were carried out in the context of the university. In addition, all of the studies were relational studies and all were conducted in the context of Turkey. For this reason, the type of publication (MA Thesis and Doctoral Dissertations) and research design (Mixed-method and Quantitative) were examined in the moderator analysis

(see Table 7). On the other side, the publication years of the studies were considered for meta-regression.

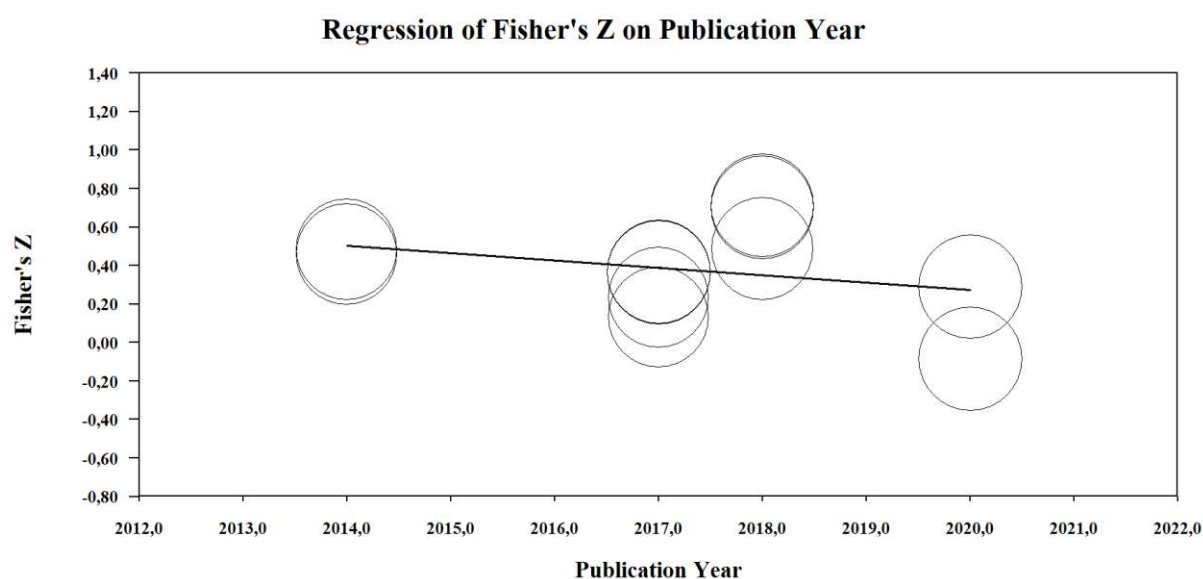
Table 7.

Moderator Analysis of L2 WTC and Motivation.

Moderator Name	k	Point Estimate	95% CI.		Z-value	P-value	Q	Heterogeneity	
			Lower Lim.	Upper Lim.				df	p
Publication Type	11	.344	.214	.461	4.991	0.000	0.707	1	0.401
MA Theses	3	.279	.068	.466	2.572	0.010			
Doctoral Dissertations	8	.388	.222	.532	4.360	0.000			
Research Design	11	.244	.157	.331	5.504	0.000	5.445	1	0.020
Mixed-Method	9	.418	.248	.587	4.826	0.000			
Quantitative	2	.182	.052	.081	.284	0.000			

According to the categorical moderator analysis (Table 7), it can be said that the category of publication type ($p > 0.05$) is not a significant moderator contributing to heterogeneity. In other words, the interrelationship among L2 WTC and Motivation does not differ significantly according to the type of publication. This also makes it clear that the reason for heterogeneity between studies is not caused by publication type. Conversely, the category of research design is a significant ($p < 0.05$) moderator contributing to heterogeneity. Therefore, it can be said that the cause for heterogeneity might be because of the research designs of the studies.

Another method to identify the cause for heterogeneity is doing a meta-regression test. For this reason, a meta-regression analysis (see Figure 9 and Table 8 below) was conducted to determine the change of effect sizes of the correlation between L2 WTC and Motivation according to years.

Figure 9. *The Relationship Between Effect Size and Publication Years.*

According to this test, it can be observed that there is a linear relationship between publication years and effect sizes. In other words, it has been observed that the effect size has decreased over the years, which means that the relationship between students' Motivation and WTC has developed negatively until today. The statistical outcomes of this test are given in Table 8 below

Table 8.

Findings on the Relationship Between Effect Size and Publication Years.

	Coefficient	Standard Error	Lower Limit	Upper Limit	Z-score	p
Publication Year	-0.038	0.039	-0.114	0.038	-0.98	0.325
Intercept	77.735	78.620	-76.358	231.829	0.99	0.322

According to Table 8, the regression coefficient is -0.038. This gives us a one-unit increase in the year of publication, resulting in a decrease of -0.038 in the effect size. However, the decrease in this effect size value was not statistically significant ($p > 0.05$).

Findings on Willingness to Communicate and Attitude

A sum of 8 correlations from 5 studies comprising 2787 participants were examined regarding the predictor attitude (see Table 9).

Table 9.

Independent correlations between L2 WTC and Attitude.

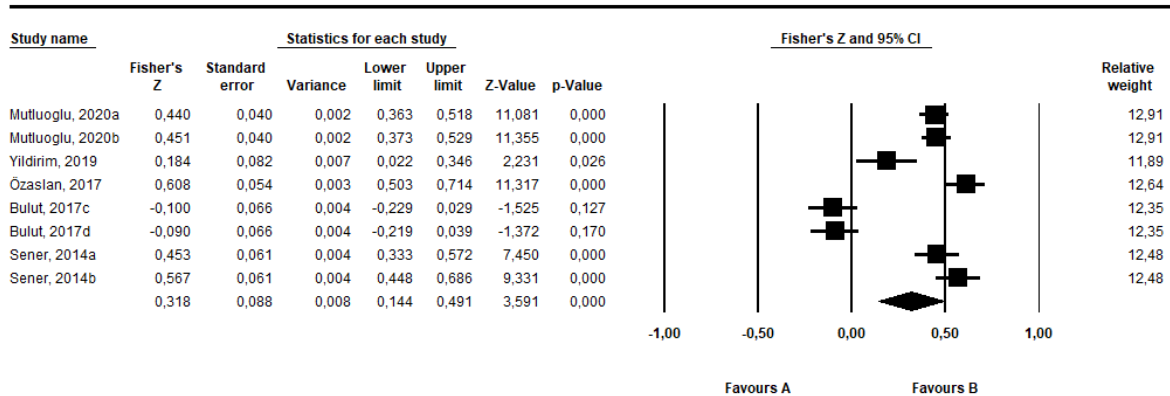
Author	Year	Sample Size	Publication	Measured Outcome	Correlation	Direction
*Mutluoğlu (WTC inside)	2020	636	Ph.D. Dissertation	Attitude	0.414	Negative
Mutluoğlu (WTC outside)	2020	636	Ph.D. Dissertation	Attitude	0.423	Positive
*Bulut (WTC with friends)	2017	234	MA Thesis	Attitude	-0.100	Negative
Bulut (WTC with foreigners)	2017	234	MA Thesis	Attitude	-0.090	Negative
*Yıldırım	2019	150	MA Thesis	Attitude	0.182	Positive
*Özaslan	2017	349	MA Thesis	Attitude	0.543	Positive
*Şener (WTC inside)	2014	274	Ph.D. Dissertation	Attitude	0.424	Positive
Şener (WTC outside)	2014	274	Ph.D. Dissertation	Attitude	0.513	Positive

In Figure 10 below, the summary of study results is presented in a forest plot showing Fisher's Z-score (indicated by a diamond) for L2 WTC and Attitude correlation is .318, 95% CI [- .144 to .491], $p < 0.05$. When the Fisher's Z is converted to Pearson's r as proposed by Borenstein et al. (2009), it can be seen that the r is 0.308 which shows a *medium* and *positive* correlation between L2 WTC and Attitude according to Cohen's (1988) classification. Two of the independent correlations ($r = -.100$ and $-.090$) in Bulut's (2017) study showed a *small* and *negative* correlation between L2 WTC and Attitude. However, these two results are not statistically significant. One of the independent correlations ($r = .182$) in Yıldırım's (2017) study showed a *small* and *positive* correlation. The remaining five independent correlations

are aggregated between .30 - .50, indicating that the correlation between L2 WTC and Attitude was *medium* and *positive*, and all were statistically significant.

Figure 10. *Meta analysis results of the correlation between L2 WTC and Attitude. The Fisher's Z-score is displayed by a diamond. Note 1: a = WTC inside; b = WTC outside in Mutluoglu, 2020; Sener, 2014. Note 2: c = WTC with friends; d= WTC with foreigners.*

Meta Analysis



Moderator Analysis and Meta-Regression for L2 WTC and Attitude

All of the studies used in the research were carried out in the context of the university. In addition, all of the studies were relational studies and all were conducted in the context of Turkey. For this reason, the type of publication (MA Thesis and Doctoral Dissertations) and research design (Mixed-Method and Quantitative) were examined in the moderator analysis (see Table 10 below). For meta-regression, the years of study were considered.

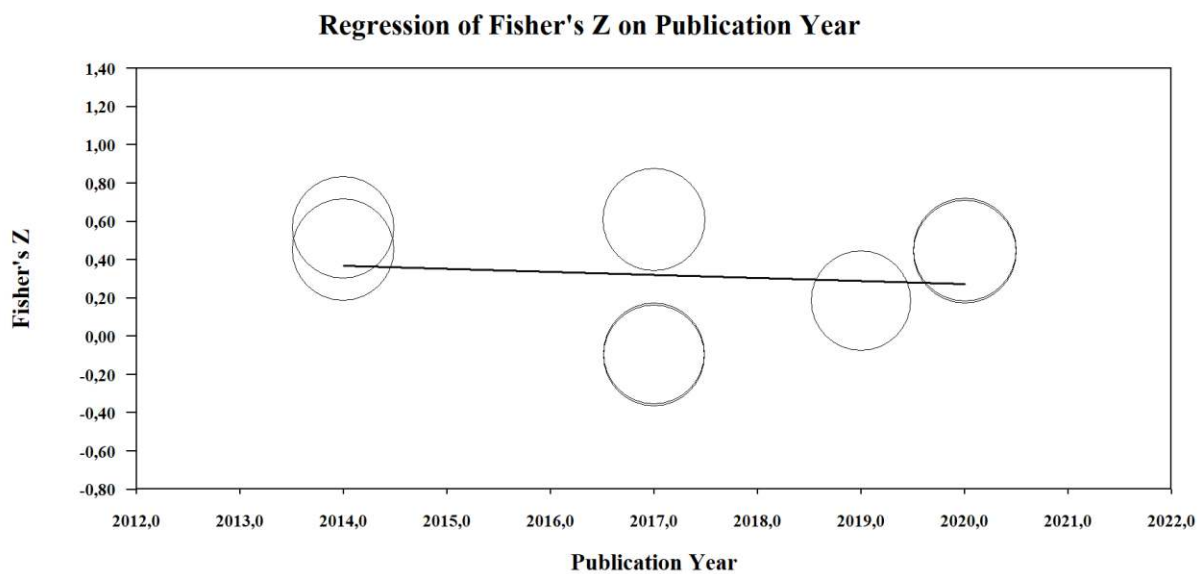
Table 10.

Moderator Analysis of L2 WTC and Attitude.

Moderator Name	k	Point Estimate	95% CI.		Z-value	P-value	Q	Heterogeneity	
			Lower Lim.	Upper Lim.				df	p
Publication Type	8	.431	.390	.470	18.499	0.000	2.755	1	0.097
MA Theses	4	.150	-.213	.478	18.556	0.000			
Doctoral Dissertations	4	.435	.394	.474	.806	0.420			
Research Design	8	.423	.336	.509	9.573	0.000	1.327	1	0.249
Mixed-Method	5	.432	.344	.520	9.625	0.000			
Quantitative	3	.140	-.347	.628	.565	0.572			

Moderator analysis (Table 10) indicates that the categories of publication type ($p>0.05$) and research design ($p>0.05$) are not significant moderators contributing to heterogeneity. In other words, the relationship between L2 WTC and Attitude does not differ significantly according to the type of publication and research design. This also reveals that the heterogeneity among studies is not due to the type of publication or research design.

A meta-regression analysis (see Figure 11 and Table 11 below) was conducted to determine the change of effect sizes of the correlation between L2 WTC and Attitude according to years.

Figure 11. *The Relationship Between Effect Size and Publication Years.*

According to this test, it can be observed that there is a linear relationship between publication years and effect sizes. In other words, it has been observed that the effect size has slightly decreased over the years, which means that the relationship between students' Attitude and WTC has developed negatively until today. The statistical results of this test are given in Table 11 below.

Table 11.

Findings on the Relationship Between Effect Size and Publication Years.

	Coefficient	Standard Error	Lower Limit	Upper Limit	Z-score	p
Publication Year	-0.015	0.043	-0.100	0.070	-0.35	0.722
Intercept	31.524	87.978	-140.909	203.958	0.36	0.720

According to Table 11, the regression coefficient is -0.015. This gives us a one-unit increase in the year of publication, resulting in a decrease of -0.015 in the effect size. However, this slight decrease in the effect size was not statistically significant ($p > 0.05$).

Findings on Willingness to Communicate and Ideal L2 self

A sum of 10 correlations from 5 studies involving 4130 participants were examined regarding the predictor language Ideal L2 Self (see Table 12 below).

Table 12.

Independent correlations between L2 WTC and Ideal L2 Self.

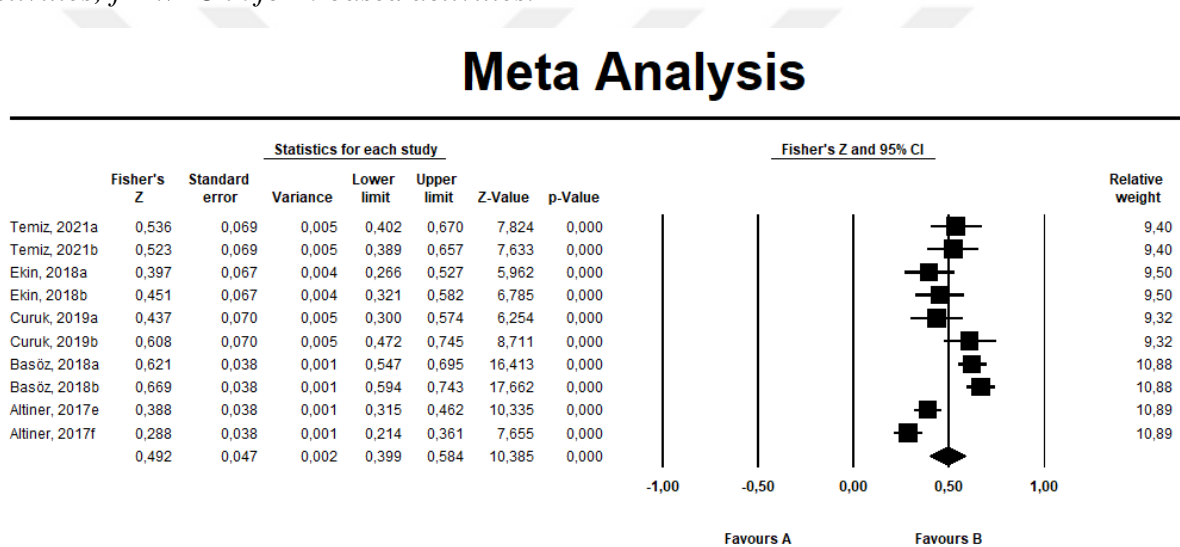
Author	Year	Sample Size	Publication	Measured Outcome	Correlation	Direction
*Temiz (WTC inside)	2021	216	MA Thesis	Ideal L2 Self	0.490	Positive
Temiz (WTC outside)	2021	216	MA Thesis	Ideal L2 Self	0.480	Positive
*Ekin (WTC inside)	2018	229	MA Thesis	Ideal L2 Self	0.377	Positive
Ekin (WTC outside)	2018	229	MA Thesis	Ideal L2 Self	0.423	Positive
*Çürük (WTC inside)	2019	208	MA Thesis	Ideal L2 Self	0.411	Positive
Çürük (WTC outside)	2019	208	MA Thesis	Ideal L2 Self	0.543	Positive
*Başöz (WTC inside)	2018	701	Ph.D. Dissertation	Ideal L2 Self	0.552	Positive
Başöz (WTC outside)	2018	701	Ph.D. Dissertation	Ideal L2 Self	0.584	Positive
*Altınır (WTC in meaning-based activities)	2017	711	Ph.D. Dissertation	Ideal L2 Self	0.370	Positive
Altınır (WTC in form-based activities)	2017	711	Ph.D. Dissertation	Ideal L2 Self	0.280	Positive

In Figure 12 below, the summary of study results is presented in a forest plot showing Fisher's Z-score (indicated by a diamond) for L2 WTC and Ideal L2 Self correlation is .492, 95% CI [– .399 to .584], $p < 0.05$. When the Fisher's Z is converted to Pearson's r as proposed by Borenstein et al. (2009), it can be seen that the r is 0.456 which shows a *medium and positive* correlation between L2 WTC and Ideal L2 Self according to Cohen's (1988) classification.

Three of the independent correlations ($r = .543$, $.552$, and $.584$) in Çuruk's (2017), and

Basöz's (2018) studies showed a *large* and *positive* correlation between L2 WTC and Ideal L2 self and were statistically significant. On the other hand, one of the independent correlations ($r = .280$) in Altiner's (2017) study showed a *small* and *positive* correlation and it was also statistically significant. The remaining six independent correlations were aggregated between .30 and .50 and showed *medium* and *positive* correlation between L2 WTC and Ideal L2 Self and were all statistically significant.

Figure 12. Meta analysis results of the correlation between L2 WTC and Ideal L2 Self. The Fisher's Z-score is displayed by a diamond. Note 1: a = WTC inside; b = WTC outside in Temiz, 2021; Ekin, 2018; Curuk, 2019; Basöz, 2018. Note 2: e= WTC in meaning-based activities; f= WTC in form-based activities.



Moderator Analysis and Meta-Regression for L2 WTC and Ideal L2 Self

All of the studies used in the research were carried out in the context of the university. In addition, all of the studies were relational studies and all were conducted in the context of Turkey. For this reason, the type of publication (MA Thesis and Doctoral Dissertations) and research design (Mixed-Method and Quantitative) were examined in the moderator analysis (see Table 13 below). For meta-regression, the publication years of the selected studies were considered.

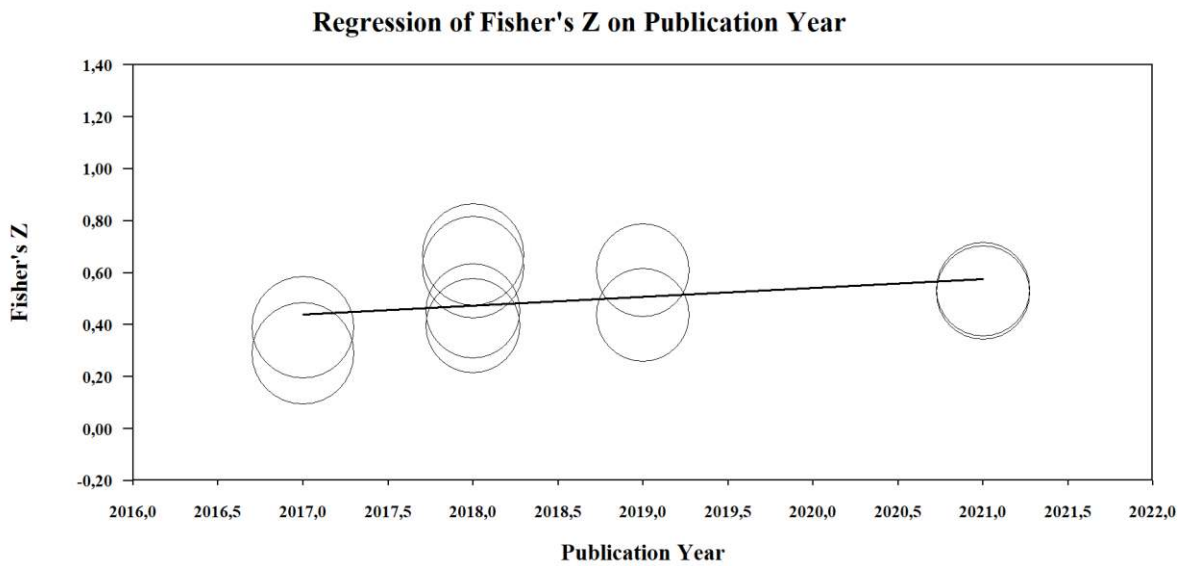
Table 13.

Moderator Analysis of L2 WTC and Ideal L2 Self.

Moderator Name	k	Point Estimate	95% CI.		Z-value	P-value	Q	Heterogeneity	
			Lower Lim.	Upper Lim.				df	p
Publication Type	10	.455	.407	.500	16.409	0.000	0.000	1	0.994
MA Theses	6	.455	.404	.503	15.504	0.000			
Doctoral Dissertations	4	.455	.302	.585	5.374	0.000			
Research Design	10	.491	.432	.549	16.409	0.000	0.000	1	0.994
Mixed-Method	4	.491	.312	.671	5.374	0.000			
Quantitative	6	.491	.429	.553	15.504	0.000			

Categorical moderator analysis (Table 13) indicates that the category of publication type ($p>0.05$) and research design ($p>0.05$) are not significant moderators contributing to heterogeneity. In other words, the interrelationship among L2 WTC and Ideal L2 Self does not differ significantly according to the type of publication and research design. This also reveals that the heterogeneity among studies is not due to the type of publication or research design.

A meta-regression analysis (see Figure 13 and Table 14 below) was conducted to determine the change of effect sizes of the correlation between L2 WTC and Ideal L2 Self according to years.

Figure 13. *The Relationship Between Effect Size and Publication Years.*

According to this test, it can be observed that there is a linear relationship between publication years and effect sizes. In other words, it has been observed that the effect size has increased over the years, which means that the interrelationship among students' Ideal L2 Self and WTC has developed positively until today. The statistical results of this test are given in Table 14 below

Table 14.

Findings on the Relationship Between Effect Size and Publication Years.

	Coefficient	Standard Error	Lower Limit	Upper Limit	Z-score	p
Publication Year	0.033	0.033	-0.032	0.099	1.00	0.318
Intercept	-67.278	67.975	-200.508	65.950	-0.99	0.322

According to Table 14, the regression coefficient is 0.033. This gives us a one-unit increase in the year of publication, resulting in an increase of 0.033 in the effect size. However, this increase in the effect size was not statistically significant ($p > 0.05$).

Findings on Willingness to Communicate and Ought-to L2 self

A sum of 8 correlations from 4 studies involving 2708 were examined regarding the predictor language Ought-to L2 Self participants (see Table 15)

Table 15.

Independent correlations between L2 WTC and Ought-to L2 Self.

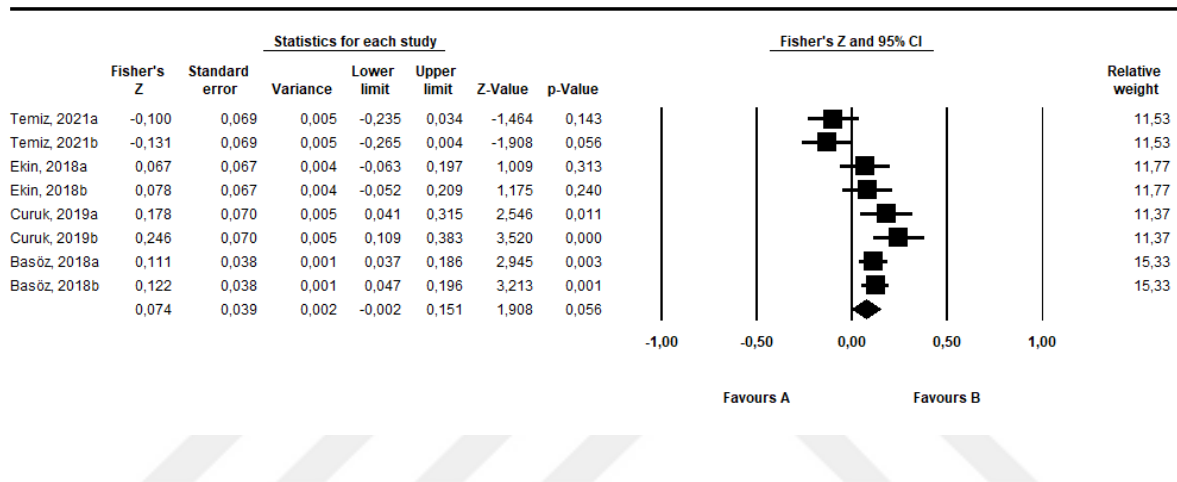
Author	Year	Sample Size	Publication	Measured Outcome	Correlation	Direction
*Temiz (WTC inside)	2021	216	MA Thesis	Ought-to L2 self	-0.100	Negative
Temiz (WTC outside)	2021	216	MA Thesis	Ought-to L2 self	-0.130	Negative
*Ekin (WTC inside)	2018	229	MA Thesis	Ought-to L2 self	0.067	Positive
Ekin (WTC outside)	2018	229	MA Thesis	Ought-to L2 self	0.078	Positive
*Çürük (WTC inside)	2019	208	MA Thesis	Ought-to L2 self	0.176	Positive
Çürük (WTC outside)	2019	208	MA Thesis	Ought-to L2 self	0.241	Positive
*Başöz (WTC inside)	2018	701	Ph.D. Dissertation	Ought-to L2 self	0.111	Positive
Başöz (WTC outside)	2018	701	Ph.D. Dissertation	Ought-to L2 self	0.121	Positive

In Figure 14 below, the summary of study results is presented in a forest plot showing Fisher's Z-score (indicated by a diamond) for L2 WTC and Ought-to L2 Self correlation is .074, 95% CI [-.002 to .151], $p > 0.05$. When the Fisher's Z is converted to Pearson's r as proposed by Borenstein et al. (2009), it can be seen that the r is 0.074 which shows a *small* and *positive* correlation between L2 WTC and Ought-to L2 Self according to Cohen's (1988) classification. Two of the independent correlations ($r = -.100$ and $-.130$) in Temiz's (2021) study showed a *medium* and *negative* correlation between L2 WTC and Ought-to L2 Self. However, these two results were not statistically significant. Four of the independent correlations ($r = .176$, $.241$, $.111$, and $.121$) in Çürük's (2019) and Başöz's (2018) study

showed a *medium* and *positive* correlation and all were statistically significant. The remaining two independent correlations ($r = .067$ and $.078$) showed a *small* and *positive* correlation between L2 WTC and Ought-to L2 Self. Nevertheless, both these two results were not statistically significant.

Figure 14. *Meta analysis results of the correlation between L2 WTC and Ought-to L2 Self. The Fisher's Z-score is displayed by a diamond. Note 1: a = WTC inside; b = WTC outside.*

Meta Analysis



Moderator Analysis and Meta-Regression for L2 WTC and Ought-to L2 Self

All of the participants in the selected studies are university students. In addition, all included studies are correlational studies. All of the studies were carried out in the context of Turkey and all of them are written in English which is an inclusion criterion. Therefore, the type of publication (MA Thesis and Doctoral Dissertations) and research design (Mixed-Method and Quantitative) were examined in the moderator analysis (see Table 16 below). On the other hand, publication year was considered for meta-regression.

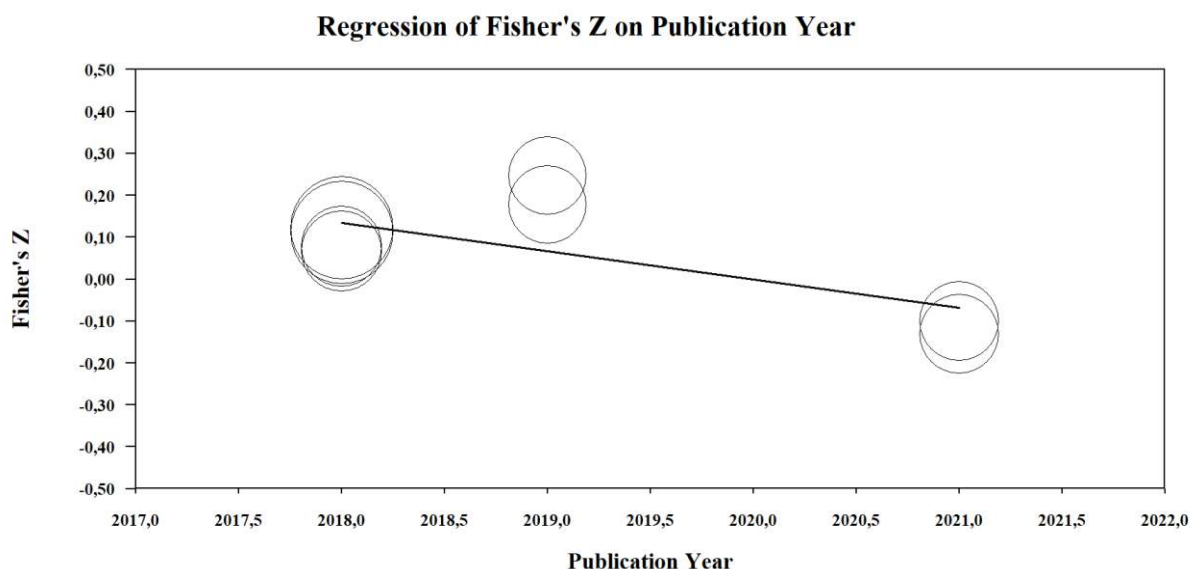
Table 16.

Moderator Analysis of L2 WTC and Ought-to L2 Self.

Moderator Name	k	Point Estimate	95% CI.		Z-value	P-value	Q	Heterogeneity	
			Lower Lim.	Upper Lim.				df	p
Publication Type	8	.106	.059	.153	4.356	0.000	0.849	1	0.357
MA Theses	6	.056	-.062	.172	0.932	0.351			
Doctoral Dissertations	2	.116	.064	.167	4.354	0.000			
Research Design	8	.106	.059	.154	4.356	0.000	0.849	1	0.357
Mixed-Method	2	.117	.064	.169	4.354	0.000			
Quantitative	6	.056	-.062	.174	0.932	0.351			

Categorical moderator analysis (Table 16) reveals that the category of publication type ($p > 0.05$) and research design ($p > 0.05$) are not significant moderators contributing to heterogeneity. That is, the interrelationship among L2 WTC and Ought-to L2 Self does not differ significantly according to the type of publication and research design. This also makes it clear that the heterogeneity among studies is not due to the type of publication or research design.

A meta-regression analysis (see Figure 15 and Table 17 below) was conducted to determine the change of effect sizes of the correlation between L2 WTC and Ought-to L2 Self according to years.

Figure 15. *The Relationship Between Effect Size and Publication Years.*

According to this test, it can be observed that there is a linear relationship between publication years and effect sizes. In other words, it has been observed that the effect size has decreased over the years, which means that the interrelationship among students' Ought-to L2 Self and WTC has developed negatively until today. The statistical results of this test are given in Table 17 below.

Table 17.

Findings on the Relationship Between Effect Size and Publication Years.

	Coefficient	Standard Error	Lower Limit	Upper Limit	Z-score	p
Publication Year	-0.067	0.024	-0.115	-0.019	-2.76	0.0059
Intercept	136.550	49.530	39.472	233.628	2.76	0.0058

According to Table 17, the regression coefficient is -0.067. This gives us a one-unit increase in the year of publication, resulting in a decrease of -0.067 in the effect size. Also, this increase in the effect size was statistically significant ($p < 0.05$).

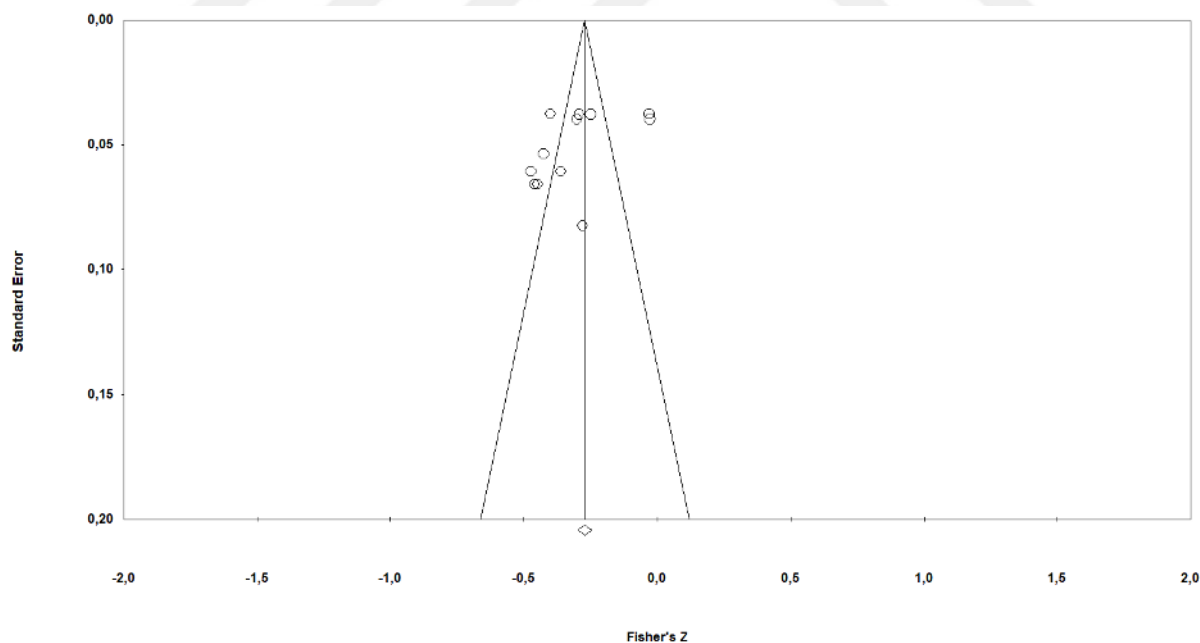
Publication Bias

Publication bias should be investigated to test the validity of the meta-analysis. To investigate whether there is a publication bias in this study some methods such as Funnel Plot, Egger's Test of the Intercept, Rosenthal's Fail-safe N, and Duval and Tweedie's Trim and Fill were used in the present study.

Publication Bias for L2 WTC and Anxiety

To examine whether the independent correlation values obtained from the L2 WTC and Anxiety relationship are due to a publication bias, the funnel plot, which is perhaps the most widely used method to uncover publication bias, was first examined (Light & Pillemer, 1984). The analysis of publication bias in the studies included in this study is shown in Figure 16 below.

Figure 16. *The Funnel Plot of the Relationship between L2 WTC and Anxiety.*



In the funnel plot, the Y-axis shows the standard error value (SE) and the X-axis shows the Fisher's Z value. The lower the Standard Error is the higher will it be placed in the funnel plot. As can be seen from the funnel plot in Figure 16, the independent correlational values

did not form a complete symmetry within the overall average correlation. Therefore, it can be concluded that there may be publication bias based on this funnel plot. However, it may not be enough to talk about publication bias by looking at the funnel plot alone. In addition, “Funnel plots give a subjective evaluation of bias...” (Duval & Tweedie, 2000 p. 456). From the quote above, it can be concluded that additional tests should be carried out for publication bias. For this reason, Duval and Tweedie’s Trim and Fill (Duval & Tweedie, 2000) test and Egger’s Test of the Intercept were carried out as well. In Table 18 below, Duval and Tweedie’s Trim and Fill test was applied.

Table 18.

Duval and Tweedie’s Trim and Fill Test for L2 WTC and Anxiety.

Variable	Studies Trimmed	Point Estimate	Lower Limit	Upper Limit	<i>Q</i>
Anxiety					
Observed values		-0.308	-0.400	-0.216	128.957
Adjusted values	0	-0.308	-0.400	-0.216	128.957

According to the results obtained from the test, it can be seen that the overall correlation under the Random effect model is -0.308 [-0,400, -0,216]. The adjusted correlation is also calculated as -0.308 [-0,400, -0,216]. Since both of the values are the same, it can be said that there is not any publication bias.

Another method used to test publication bias is Egger’s Test of the Intercept (Egger et al. 1997). The test is used to evaluate potential publication bias in a meta-analysis via funnel plot asymmetry. The results of Egger’s Test of the Intercept for L2 WTC and Anxiety are shown in Table 19 below.

Table 19.

Egger's Test of the Intercept for L2 WTC and Anxiety.

Variable	Intercept	Standard error	Lower Limit	Upper Limit	T-value	df	p value (2-tailed)
Anxiety	-6.42304	3.610	-14.468	1.622	1.77888	10	0.105

According to Egger's Test of the Intercept, the intercept value for Anxiety was calculated as -6.42304. It is seen that the intercept values calculated for this variable do not differ significantly ($p > .05$) with the interpretation of the significance levels in the 95% confidence interval. According to this, it is clearly stated that there is no publication bias.

Lastly, Rosenthal's Fail-Safe N test was used to decide on the strength of the overall average correlation value. The results of the test can be found in Figure 17 below.

Figure 17. *Rosenthal's Fail-Safe N Test Results for L2 WTC and Anxiety.*

Classic fail-safe N

Z-value for observed studies	-21,04546
P-value for observed studies	0,00000
Alpha	0,05000
Tails	2,00000
Z for alpha	1,95996
Number of observed studies	12,00000
Number of missing studies that would bring p-value to > alpha	1372,00000

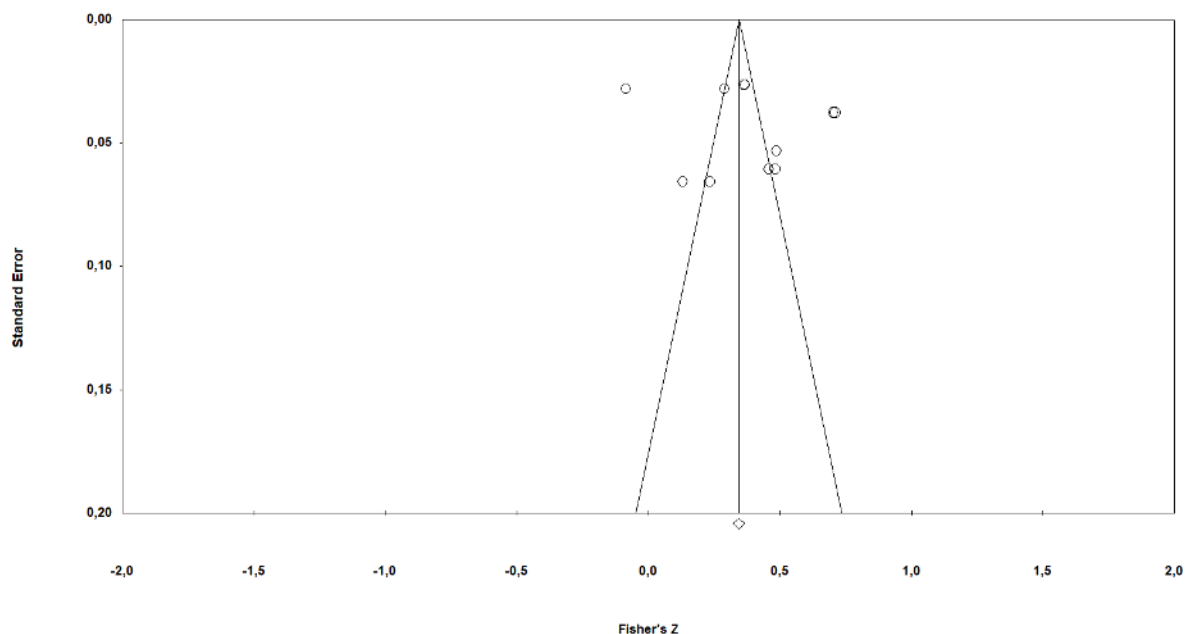
The findings of Fail-Safe N showed a fail-safe N of 1372 ($p < 0,005$) (Figure 17). This means that making the estimated overall effect size based on the results of this test meaningless, 1372 studies with an effect size of zero must be found and included in the study (Rosenthal, 1979). According to Rosenthal (1979), if the required number of studies to be included in the

study is more than $5k+10$ (k is the number of studies) of the observed studies, it can be said that the overall effect size is not due to publication bias. According to the results of the Rosenthal's Fail-safe N test, it was found that 1372 studies with a mean effect of zero would be needed to invalidate the overall effect size. The Rosenthal (1979) threshold was calculated as 70 ($5*12+10$). Since the sum of the studies exceeds this threshold, it can be understood that the overall effect size is not the result of publication bias.

Publication Bias for L2 WTC and Motivation

To examine the publication bias in the results of the independent correlational results obtained from the correlational of L2 WTC and Motivation, the funnel plot was first used. In Figure 18 below are the analysis of publication bias in the studies included in the research.

Figure 18. *The Funnel Plot of the Relationship between L2 WTC and Motivation.*



In the funnel plot, the Y-axis shows the standard error value (SE) and the X-axis shows the Fisher's Z value. The lower the Standard Error is the higher will it be placed in the funnel plot. As can be seen from the funnel plot in Figure 18, the independent correlational values did not form a complete symmetry within the overall average correlation. For this reason, it can be concluded that there may be publication bias based on this funnel plot. However, since we know that a funnel plot may give a subjective evaluation of bias, we need to carry out additional tests for publication bias. Therefore, Duval and Tweedie's Trim and Fill test and Egger's Test of the Intercept were carried out as well. In Table 20 below, the results of the Duval and Tweedie's Trim and Fill test are given.

Table 20.

Duval and Tweedie's Trim and Fill Test for L2 WTC and Motivation.

Variable	Studies Trimmed	Point Estimate	Lower Limit	Upper Limit	<i>Q</i>
Motivation					
Observed values		0.359	0.222	0.482	451.784
Adjusted values	3	0.262	0.109	0.404	816.565

According to the results obtained from the test, it can be seen that the overall correlation under the Random effect model is 0,359 [0.222, 0.482]. The adjusted correlation is calculated as 0,262 [0.109, 0.404]. Since both of the values are close to one another, it can be concluded from the test that there is no publication bias.

Another method used to test publication bias is Egger's Test of the Intercept. The test is used to evaluate potential publication bias in a meta-analysis via funnel plot asymmetry. The results of Egger's Test of the Intercept for L2 WTC and Motivation if shown in Table 21 below.

Table 21.

Egger's Test of the Intercept for L2 WTC and Motivation.

Variable	Intercept	Standard error	Lower Limit	Upper Limit	T-value	df	p value (2-tailed)
Motivation	4.46036	6.16434	-9.484	18.405	0.72358	9	0.487

According to Egger's Test of the Intercept, the intercept value for Motivation was calculated as 4.46036. It is seen that the intercept values calculated for this variable do not differ significantly ($p > .05$) with the interpretation of the significance levels in the 95% confidence interval. According to this, it is clearly stated that there is no publication bias.

Lastly, Rosenthal's Fail-Safe N test was used to determine the strength of the overall average correlation value. The results of the test can be found in Figure 19 below.

Figure 19. *Rosenthal's Fail-Safe N Test Results for L2 WTC and Motivation.*

Classic fail-safe N

Z-value for observed studies	30,78918
P-value for observed studies	0,00000
Alpha	0,05000
Tails	2,00000
Z for alpha	1,95996
Number of observed studies	11,00000
Number of missing studies that would bring p-value to $> \alpha$	2704,00000

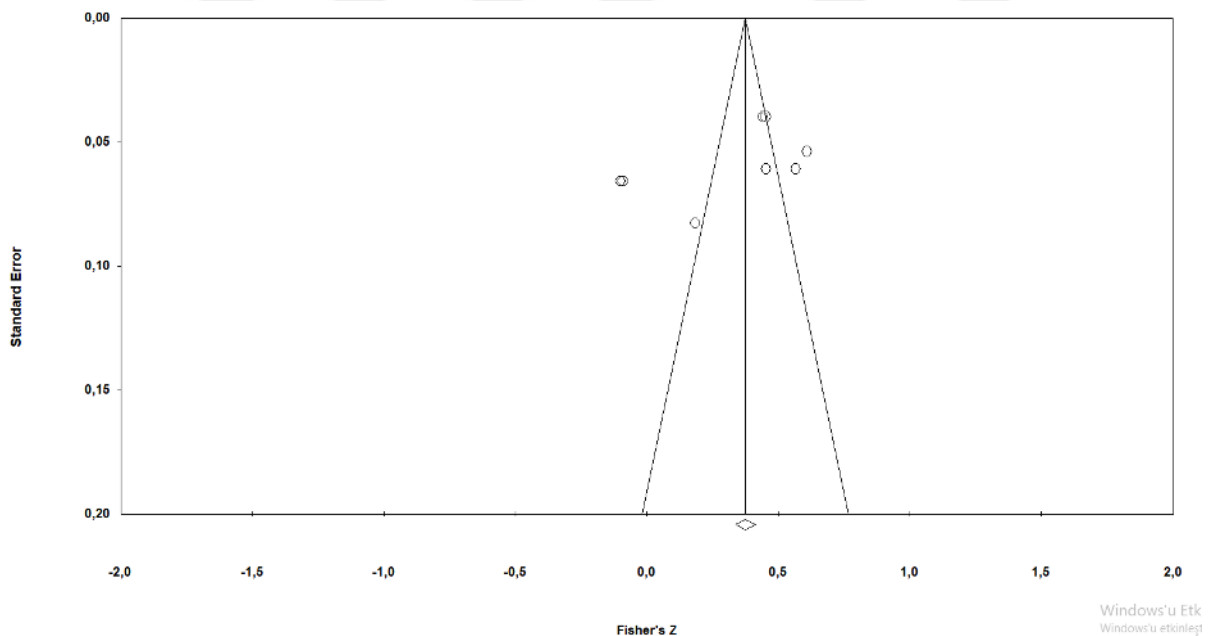
The findings of Fail-Safe N showed a fail-safe N of 2704 ($p < 0,005$) (Figure 19). To make the estimated overall effect size based on the results of this test meaningless, 2704 studies with an effect size of zero must be found and included in the study (Rosenthal, 1979). According to Rosenthal (1979), if the required number of studies to be included in the study is more than $5k+10$ (k is the number of studies) of the observed studies, it can be said that the overall effect

size is not a result of publication bias. According to the results of the Rosenthal's Fail-safe N test, it was found that 2704 studies with a mean effect of zero would be needed to nullify the overall effect size. The Rosenthal (1979) threshold was calculated as 65 ($5 \times 11 + 10$). Since the sum of the studies exceeds this threshold, it can be inferred that the overall effect size is not the result of publication bias.

Publication Bias for L2 WTC and Attitude

Firstly, the funnel plot was used to examine the publication bias in the results of the independent correlational results obtained from the correlational of L2 WTC and Attitude. In Figure 20 below are the analysis of publication bias in the studies included in the research.

Figure 20. *The Funnel Plot of the Relationship between L2 WTC and Attitude.*



In the funnel plot, the X-axis shows the Fisher's Z value and the Y-axis shows the Standard Error value (SE). The lower the Standard Error is the higher will it be placed in the funnel

plot. As can be seen from the funnel plot in Figure 20, the independent correlational values did not form a complete symmetry within the overall average correlation. Therefore, it can be concluded that there may be publication bias based on this funnel plot. However, since we know that a funnel plot may give a subjective evaluation of bias, we need to carry out additional tests for publication bias. Therefore, Duval and Tweedie's Trim and Fill test and Egger's Test of the Intercept were carried out as well. In Table 22 below, the results of the Duval and Tweedie's Trim and Fill test are given.

Table 22.

Duval and Tweedie's Trim and Fill Test for L2 WTC and Attitude.

Variable	Studies Trimmed	Point Estimate	Lower Limit	Upper Limit	<i>Q</i>
Attitude					
Observed values		0.307	0.143	0.454	144.398
Adjusted values	0	0.307	0.143	0.454	144.398

According to the results obtained from the test, it can be seen that the overall correlation under the Random effect model is 0.307 [0.143, 0.454]. The adjusted correlation is calculated also as 0.307 [0.143, 0.454]. Since both of the values are the same, it can be concluded from the test that there is no publication bias.

The following method used to test publication bias is Egger's Test of the Intercept. The test is used to evaluate potential publication bias in a meta-analysis via funnel plot asymmetry. The results of Egger's Test of the Intercept for L2 WTC and Attitude if shown in Table 23 below.

Table 23.

Egger's Test of the Intercept for L2 WTC and Attitude.

Variable	Intercept	Standard error	Lower Limit	Upper Limit	T-value	df	p value (2-tailed)
Attitude	-9.12952	6.22730	-24.36717	6.10813	1.46605	6	0.19299

According to Egger's Test of the Intercept, the intercept value for Attitude was calculated as - 9.12952. It is seen that the intercept values calculated for this variable do not differ significantly ($p > .05$) with the interpretation of the significance levels in the 95% confidence interval. According to this, it is clearly stated that there is no publication bias.

Lastly, Rosenthal's Fail-Safe N test was used to determine the strength of the overall average correlation value. The results of the test can be found in Figure 21 below.

Figure 21. *Rosenthal's Fail-Safe N Test Results for L2 WTC and Attitude.*

Classic fail-safe N

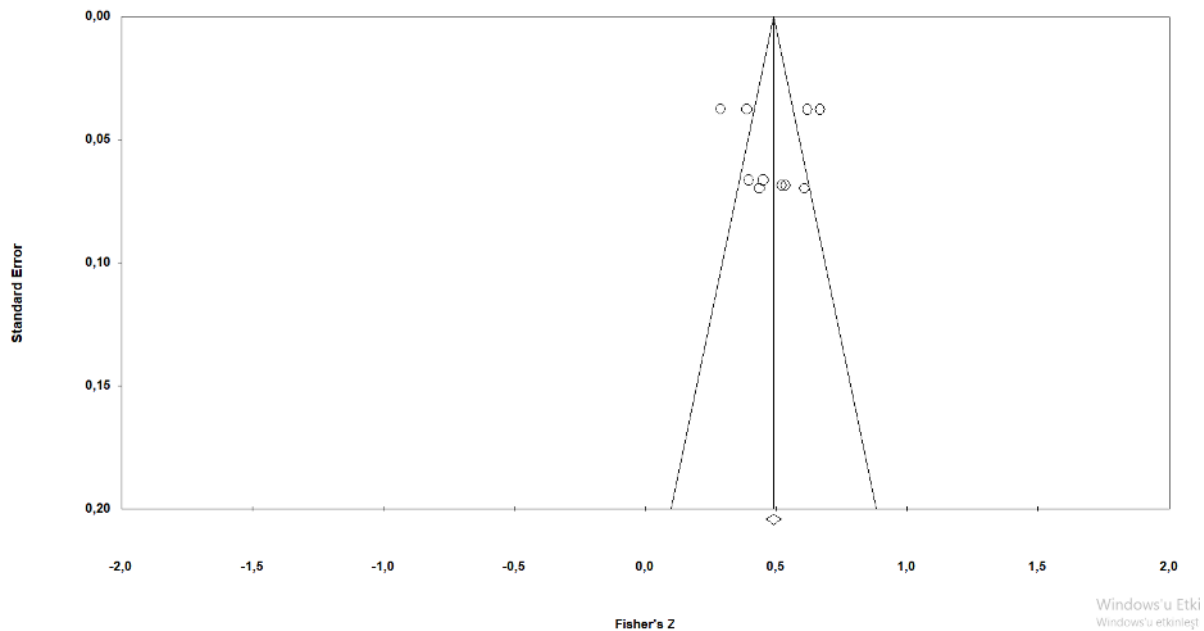
Z-value for observed studies	17,63133
P-value for observed studies	0,00000
Alpha	0,05000
Tails	2,00000
Z for alpha	1,95996
Number of observed studies	8,00000
Number of missing studies that would bring p-value to > alpha	640,00000

The findings of Fail-Safe N showed a fail-safe N of 640 ($p < 0,005$) (Figure 21). To make the estimated overall effect size according to the results of this test meaningless, 640 studies with an effect size of zero must be found and included in the study (Rosenthal, 1979). According to Rosenthal (1979), if the required number of studies to be included in the study is more than $5k+10$ (k is the number of studies) of the observed studies, it can be concluded that the overall effect size is not a result of publication bias. According to the results of the Rosenthal's Fail-safe N test, it was found that 640 studies with a mean effect of zero would be needed to nullify the overall effect size. The Rosenthal (1979) threshold was calculated as 50 ($5*8+10$). Since the sum of the studies exceeds this threshold, it can be understood that the overall effect size is not the result of publication bias.

Publication Bias for L2 WTC and Ideal L2 Self

Firstly, the funnel plot was used to investigate the publication bias for L2 WTC and Ideal L2 Self. In Figure 22 below are the analysis of publication bias in the studies included in the research.

Figure 22. *The Funnel Plot of the Relationship between L2 WTC and Ideal L2 Self.*



In the funnel plot, the X-axis shows the Fisher's Z value and the Y-axis shows the Standard Error value (SE). The lower the Standard Error is the higher will it be placed in the funnel plot. As can be seen from the funnel plot in Figure 22, the independent correlational values did not form a complete symmetry within the overall average correlation. For this reason, it can be concluded that there may be publication bias based on this funnel plot. However, since it is known that a funnel plot may give a subjective evaluation of bias, additional tests need to be carried out for publication bias. Therefore, Duval and Tweedie's Trim and Fill test and Egger's Test of the Intercept were carried out as well. In Table 24 below, the results of Duval and Tweedie's Trim and Fill test are given.

Table 24.

Duval and Tweedie's Trim and Fill Test for L2 WTC and Ideal L2 Self.

Variable	Studies Trimmed	Point Estimate	Lower Limit	Upper Limit	<i>Q</i>
Ideal L2 Self					
Observed values		0.455	0.378	0.525	77.000
Adjusted values	0	0.455	0.378	0.525	77.000

According to the results obtained from the test, it can be seen that the overall correlation under the Random effect model is 0.455 [0.378, 0.525]. The adjusted correlation is also calculated as 0.455 [0.378, 0.525]. Since both of the values are the same, it can be concluded from the test that there is no publication bias.

The following method used to test publication bias is Egger's Test of the Intercept. The test is used to evaluate potential publication bias in a meta-analysis via funnel plot asymmetry. The results of Egger's Test of the Intercept for L2 WTC and Attitude if shown in Table 25 below.

Table 25.

Egger's Test of the Intercept for L2 WTC and Ideal L2 Self.

Variable	Intercept	Standard error	Lower Limit	Upper Limit	T-value	df	<i>p</i> value (2-tailed)
Ideal L2 Self	.16058	3.41419	-7.71256	8.03372	.04703	8	0.96364

According to Egger's Test of the Intercept, the intercept value for Ideal L2 Self was calculated as .16058. It is seen that the intercept values calculated for this variable do not differ significantly ($p > .05$) with the interpretation of the significance levels in the 95% confidence interval. According to this, it is clearly stated that there is no publication bias.

Lastly, Rosenthal's Fail-Safe N test was used to determine the strength of the overall average correlation value. The results of the test can be found in Figure 23 below

Figure 23. *Rosenthal's Fail-Safe N Test Results for L2 WTC and Ideal L2 Self.*

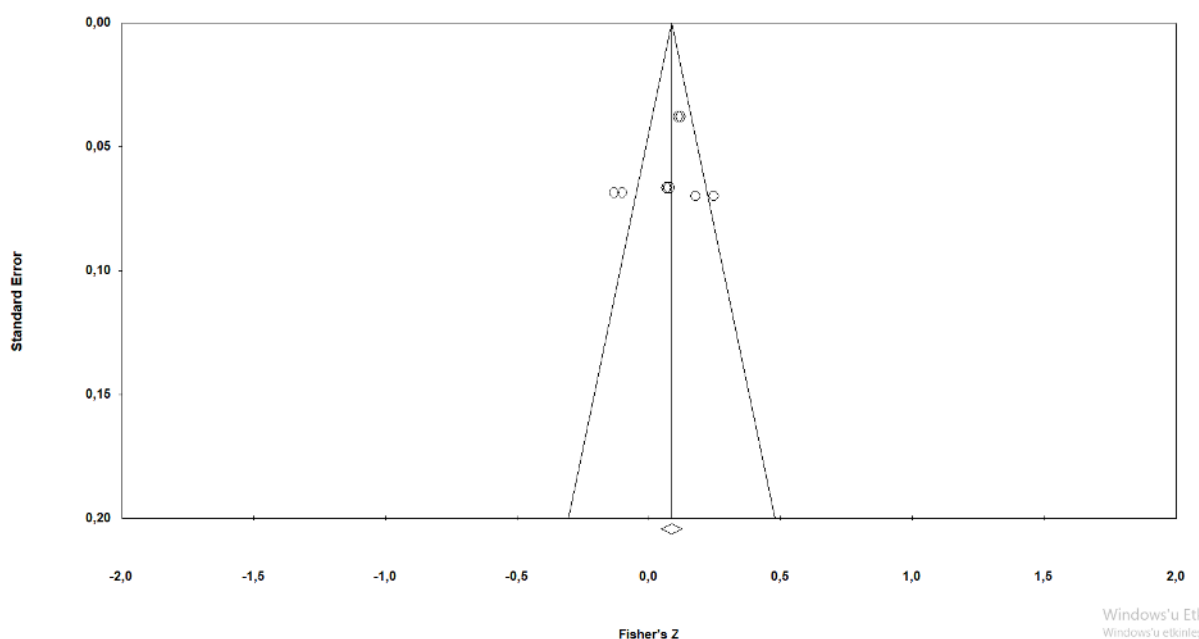
Classic fail-safe N

Z-value for observed studies	30,11542
P-value for observed studies	0,00000
Alpha	0,05000
Tails	2,00000
Z for alpha	1,95996
Number of observed studies	10,00000
Number of missing studies that would bring p-value to > alpha	2351,00000

The findings of Fail-Safe N showed a fail-safe N of 2351 ($p < 0,005$) (Figure 23). This means that to make the estimated overall effect size according to the results of this test meaningless, 2351 studies with an effect size of zero must be found and included in the study (Rosenthal, 1979). According to Rosenthal (1979), if the required number of studies to be included in the study is more than $5k+10$ (k is the number of studies) of the observed studies, it can be concluded that the overall effect size is not a result of publication bias. According to the results of the Rosenthal's Fail-safe N test, it was found that 2351 studies with a mean effect of zero would be needed to nullify the overall effect size. The Rosenthal (1979) threshold was calculated as 60 ($5*10+10$). Since the sum of the studies exceeds this threshold, it can be inferred that the overall effect size is not the result of publication bias.

Publication Bias for L2 WTC and Ought-to L2 Self

Firstly, the funnel plot was used to examine the publication bias in the results of the independent correlational results obtained from the correlational of L2 WTC and Ought-to L2 Self. In Figure 24 below are the analysis of publication bias in the studies included in the research.

Figure 24. *The Funnel Plot of the Relationship between L2 WTC and Ought-to L2 Self.*

In the funnel plot, the X-axis shows the Fisher's Z value and the Y-axis shows the Standard Error value (SE). The lower the Standard Error is the higher will it be placed in the funnel plot. As can be inferred from the funnel plot in Figure 24, the independent correlational values did not form a complete symmetry within the overall average correlation. Therefore, it can be concluded that there may be publication bias based on this funnel plot. However, since we know that a funnel plot may give a subjective evaluation of bias, we need to carry out additional tests for publication bias. Therefore, Duval and Tweedie's Trim and Fill test and Egger's Test of the Intercept were carried out as well. In Table 26 below, the results of Duval and Tweedie's Trim and Fill test are given.

Table 26.

Duval and Tweedie's Trim and Fill Test for L2 WTC and Ought-to L2 Self.

Variable	Studies Trimmed	Point Estimate	Lower Limit	Upper Limit	<i>Q</i>
Ought-to L2 Self					
Observed values		0.074	-0.002	0.149	25.797
Adjusted values	0	0.074	-0.002	0.149	25.797

According to the results obtained from the test, it can be seen that the overall correlation under the Random effect model is 0.074 [-0.002, 0.149]. The adjusted correlation is also calculated as 0.074 [-0.002, 0.149]. Since both of the values are the same, it can be concluded from the test that there is no publication bias.

The following method used to test publication bias is Egger's Test of the Intercept. The test is used to evaluate potential publication bias in a meta-analysis via funnel plot asymmetry. The results of Egger's Test of the Intercept for L2 WTC and Attitude if shown in Table 27 below.

Table 27.

Egger's Test of the Intercept for L2 WTC and Ought-to L2 Self.

Variable	Intercept	Standard error	Lower Limit	Upper Limit	T-value	df	p value (2-tailed)
Ought-to L2 Self	-1.91507	2.51236	-8.06259	4.23245	.76226	6	0.47479

According to Egger's Test of the Intercept, the intercept value for Ought-to L2 Self was calculated as -1.91507. It is seen that the intercept values calculated for this variable do not differ significantly ($p > .05$) with the interpretation of the significance levels in the 95% confidence interval. According to this, it is clearly stated that there is no publication bias.

Lastly, Rosenthal's Fail-Safe N test was used to determine the strength of the overall average correlation value. The results of the test can be found in Figure 25 below.

Figure 25. *Rosenthal's Fail-Safe N Test Results for L2 WTC and Ought-to L2 Self.*

Classic fail-safe N

Z-value for observed studies	3,90140
P-value for observed studies	0,00010
Alpha	0,05000
Tails	2,00000
Z for alpha	1,95996
Number of observed studies	8,00000
Number of missing studies that would bring p-value to > alpha	24,00000

The findings of Fail-Safe N showed a fail-safe N of 24 ($p < 0,005$) (Figure 25). This means that making the estimated overall effect size according to the results of this test meaningless, 24 studies with an effect size of zero must be found and included in the study (Rosenthal, 1979). According to Rosenthal (1979), if the required number of studies to be included in the study is more than $5k+10$ (k is the number of studies) of the observed studies, it can be concluded that the overall effect size is not a result of publication bias. According to the results of the Rosenthal's Fail-safe N test, it was found that 24 studies with a mean effect of zero would be needed to nullify the overall effect size. The Rosenthal (1979) threshold was calculated as 50 ($5*8+10$). Since the sum of the studies did not exceed this threshold, it can be understood that the overall effect size may have resulted from publication bias.

CHAPTER IV

DISCUSSION AND CONCLUSION

In this section, the results and discussion of the findings for each predictor of WTC are given separately. Subsequently, the implications of the researcher are given. Lastly, recommendations for future research are given.

Introduction

Willingness to Communicate (WTC) is one of the topics that have been seriously researched since the 2010s in Turkey. It is a known fact that in the Turkish context, one of the most important problems in English learning is speaking skills. In Turkey, it is thought that students cannot speak as well as other students in different parts of the world (Kara & Ayaz, 2017). Learners know the language; however, they have problems speaking out their knowledge. In order to improve their speaking skills, students need to have the necessary desire to speak in English. Moreover, having enthusiasm for speaking English can help students to improve speaking and language skills. Therefore, the current study's goal is to examine the interrelationship among the five predictors (anxiety, ideal L2 self, motivation, attitude, and ought-to L2 self) and the Willingness to Communicate (WTC) by employing a correlational meta-analysis.

Correlational studies conducted between 2014 and 2021 in the Turkish context about WTC and its five predictors were combined to examine the interrelationship among the five predictors and WTC in the Turkish context. In line with this, a total of 27 studies consisting of MA theses and Ph.D. dissertations were obtained. As a result of the inclusion-exclusion criteria, 11 studies were included into the present study. Of these 11 studies included in the analysis, 4 studies (36.36%) were Ph.D. dissertations, 7 studies (63.63%) were MA theses, 6

studies (54.54%) employed mixed-method research design, and 5 studies (45.45%) employed quantitative research design.

Conclusion and Discussion on the Relationship between WTC and Anxiety

In this part of the meta-analysis, 12 effect sizes were identified, with seven studies meeting the inclusion criteria to examine the interrelationship between anxiety and WTC. A heterogeneity test was utilized to decide whether the studies were heterogeneously distributed to decide on the model selection to combine the effect sizes. According to the heterogeneity test, it was concluded that there was a significant heterogeneity ($Q > \chi^2$; $p < .05$) among the studies, and this heterogeneity was at a "high" level ($I^2 = 91\%$). Therefore, it was deemed appropriate to combine these effect sizes with the Random Effects Model. The overall effect size (Fisher's Z) of individual studies combined according to the Random Effects Model was calculated as -0.308 . When Fisher's Z effect size was converted to Pearson r correlational value, the correlational value (r) was found to be -0.299 , which shows that the relationship between WTC and Anxiety is *moderate* and *negative*. This result is similar to the results of the theses investigating the relationship between anxiety and WTC (Mutluoğlu, 2020; Yıldırım, 2019; Özaslan, 2017; Bulut, 2017; Başöz, 2018; Şener, 2014; Altınır, 2017). To date, no meta-analysis has been employed to examine interrelationship among WTC and its predictors in the Turkish setting. Therefore, the outcomes of this meta-analysis were compared with a meta-analysis research by MacIntyre et al. (2010) in the foreign context. The meta-analysis results in this study show parallel results with that meta-analysis study. In that meta-analysis study, the overall effect size obtained from 12 studies examining the relationship between WTC and anxiety was found to be $r = -.29$, which is quite similar to this study.

To define the cause of the heterogeneity, a categorical moderator analysis was determined to be performed. According to the categorical moderator analysis, it was inferred

that the categories of publication type and study design were both significant ($p < .05$) moderators contributing to heterogeneity. This shows that the interrelationship among L2 WTC and anxiety differs significantly according to the type of publication and research design. According to the publication type moderator, there is a negative and moderate effect in master's and doctoral theses. However, the effect level is higher in master's theses ($r = -.394$) compared to doctoral theses ($r = -.258$). It can be thought that the reason for the difference in the effect level between theses may be that the evaluation process of doctoral theses progresses more comprehensively and objectively than master's theses. The reason for this is the thought that doctoral theses is handled more comprehensively and written more meticulously. On the other hand, it was found that the effect level is higher in studies with quantitative research design ($r = -.442$) than studies with mixed-method research design ($r = -.265$). These results indicate that the heterogeneity between studies may have been caused due to research design and publication type.

In the last part of the analysis, the publication bias of the effect size obtained for the anxiety variable was reviewed. Funnel Plot, Duval and Tweedie's Trim and Fill (Duval & Tweedie, 2000), Egger's Intercept Test (Egger et al., 1997), and Rosenthal's Fail-safe N (Rosenthal, 1979) tests were utilized to control for publication bias used. As a result of the analysis of publication bias for the anxiety variable, it was decided that there was lack of publication bias for this predictor. Thus, the results of the studies investigating the anxiety variable are thought to have provided reliable results.

Conclusion and Discussion on the Relationship between WTC and Motivation

In total, 11 effect sizes were gathered from six independent studies that met the inclusion criteria on the interrelationship between WTC and motivation in the present meta-analysis study. A heterogeneity test was employed to decide whether there is an existing heterogeneity among studies included and to decide on the model to combine the effect sizes.

According to the heterogeneity test, it was concluded that there was a significant and high heterogeneity ($Q > \chi^2$; $p < .05$; $I^2 = 97\%$) among the studies. For this reason, it was found appropriate to combine these effect sizes with the Random Effects Model. The overall effect size (Fisher's Z) of individual studies synthesized with the Random Effects Model was calculated as .376. Later, the Fisher's Z effect size value was converted to Pearson r correlational value, the correlational value (r) was found to be 0.359, which shows that the interrelationship among WTC and Motivation is *moderate* and *positive*. This out is alike the outcomes of the theses investigating the relationship between motivation and WTC (Mutluoğlu, 2020; Şener, 2014; Altınır, 2017; Uyanık, 2018). The meta-analysis results for the motivation variable in this study show parallel results with MacIntyre et al. (2010) meta-analysis study. In the study conducted by MacIntyre et al. (2010), the overall effect size reached from 8 studies investigating the relationship between WTC and motivation was found to be $r = .37$. This result show similar results to the present meta-analysis study. In line with this, it can be concluded that the outcomes of the current meta-analysis are valid.

To define the reason for heterogeneity among studies, a categorical moderator analysis test was determined to be performed. As a result of the categorical moderator analysis, it was concluded that publication type is not a significant ($p > .05$) contributor to heterogeneity; however, the research design category was a significant ($p < .05$) moderator contributing to heterogeneity which shows that. There is a positive and small effect ($r = .182$) in quantitate studies; whereas in mixed-method research there is a positive and moderate effect ($r = .418$). This also makes it clear that the cause of heterogeneity among studies may have resulted from the research design of the studies.

Lastly, the publication bias of the effect size synthesized for the motivation variable was reviewed. Funnel Plot, Duval and Tweedie's Trim and Fill (Duval & Tweedie, 2000), Egger's Intercept Test (Egger et al., 1997), and Rosenthal's Fail-safe N (Rosenthal, 1979) tests

were used to control for publication bias used. As a result of the analysis of publication bias for the motivation variable, it can be concluded that there was lack of publication bias for this predictor. In this respect, the studies included on the motivation variables are thought to have provided valid results.

Conclusion and Discussion on the Relationship between WTC and Attitude

To investigate the level of interrelation among attitude and WTC, eight effect sizes were determined from five studies meeting the inclusion criteria. Heterogeneity test was performed to determine whether the variance between these effect sizes was due to sampling error and to decide on the model selection that would combine the effect sizes. According to the heterogeneity test, it was concluded that there was a significant heterogeneity ($Q > \chi^2$; $p < .05$) among studies, and this heterogeneity was at a "high" level ($I^2 = 95\%$). Therefore, it was deemed appropriate to combine these effect sizes with the Random Effects Model. The overall effect size (Fisher's Z) of individual studies combined according to the Random Effects Model was calculated as .318. When Fisher's Z effect size was converted to Pearson r correlational value, the correlational value (r) was found to be 0.308, which shows that the relationship between WTC and Attitude is moderate and positive. This result is similar to the results of the theses investigating the relationship between attitude and WTC (Mutluoğlu, 2020; Şener, 2014). Similar results were found in a study conducted by Çetinkaya (2005), where it was found that students had a positive attitude toward English. There is no meta-analysis study investigating the relationship between attitude and WTC; therefore, the study results for the attitude variable could not be compared with a meta-analysis study.

According to the results, the included studies showed heterogeneous distribution. To determine the cause for the heterogeneity of the studies, a categorical moderator was determined to be performed. According to the categorical moderator analysis, both publication type and study design categories did not significantly contribute to heterogeneity

($p > .05$). In other words, the heterogeneity among studies cannot have resulted from publication type or research design.

In the last part of the analysis, the publication bias of the effect size obtained for the attitude variable was reviewed. Funnel Plot, Duval and Tweedie's Trim and Fill (Duval & Tweedie, 2000), Egger's Intercept Test (Egger et al., 1997), and Rosenthal's Fail-safe N (Rosenthal, 1979) tests were utilized to determine publication bias of the studies. According to the results of the analysis of publication bias for the attitude variable, no evidence for publication bias could be found. Based on these results, it is thought that the results of the individual studies included in the study are reliable.

Conclusion and Discussion on the Relationship between WTC and Ideal L2 Self

To investigate the level of interrelation between attitude and WTC, 10 effect sizes were determined from five studies meeting the inclusion criteria. A heterogeneity test was utilized to decide on model selection to synthesize the effect sizes and to discover the cause and size of heterogeneity among studies. According to the heterogeneity test, it was decided that there was a significant and high heterogeneity ($Q > \chi^2$; $p < .05$; $I^2 = 88\%$) among the studies. For this reason, the Random Effects Model was selected to combine the effect sizes. The overall effect size (Fisher's Z) combined with the Random Effects Model was calculated as .492. The outcomes of the effect size converted to correlation value (r) was 0.456 making it clear that the relationship between WTC and Ideal L2 Self is medium and positive. This outcome is alike the results of the theses examining the interrelationship between ideal L2 self and WTC (Temiz, 2021; Ekin, 2018; Çürük, 2019; Altın, 2017). According to results from the relationship between WTC and Ideal L2 Self, it was found that there was a positive interrelationship between Ideal L2 Self and WTC and that Ideal L2 Self contributed to L2 communication (Öz, 2016; Bursalı & Öz, 2017; Sak, 2020).

According to the heterogeneity test, it was found that there was heterogeneity among studies included in the present study. To decide the reason of the heterogeneity, a categorical moderator was determined to be executed. In line with the outcomes of the categorical moderator analysis, it was concluded that both publication type and study design categories did not significantly contribute to heterogeneity ($p > .05$). In other words, students' Ideal L2 Self differs neither in terms of publication type nor research design. Moreover, the reason for heterogeneity among studies did not cause from research design or publication type.

Lastly, the publication bias of the effect size obtained for the Ideal L2 Self variable was reviewed. Funnel Plot, Duval and Tweedie's Trim and Fill (Duval & Tweedie, 2000), Egger's Intercept Test (Egger et al., 1997), and Rosenthal's Fail-safe N (Rosenthal, 1979) tests were performed for publication bias. In accordance with the publication bias tests, it was concluded that there was no publication bias in the study. Thus, this is thought to have provided valid results as a result of combining the results of the individual studies included in this study.

Conclusion and Discussion on the Relationship between WTC and Ought-to L2 Self

In this part of the meta-analysis, eight effect sizes obtained from four independent studies on the interrelationship between Ought-to L2 Self and WTC were considered. After utilizing a heterogeneity test, the decision on the model selection to combine the effect sizes was done. According to the heterogeneity test, it was concluded that there was a significant heterogeneity ($Q > \chi^2$; $p < .05$) among the studies. Consequently, the Random Effects Model was selected to combine the effect sizes. The overall effect size (Fisher's Z) of individual studies combined according to the Random Effects Model was calculated as .074. When Fisher's Z effect size was converted to Pearson r correlational value, the correlational value (r) was found to be 0.074, which shows that the interrelationship between WTC and Ought-to L2 Self is *small* and *positive*. This outcome is alike to the outcomes of the theses investigating

the interrelationship between ought-to L2 self and WTC (Ekin, 2018; Çürük, 2019; Başöz, 2018). Similar results were found in a study by Siying et al. (2020), where the correlational result between WTC and Ought-to L2 Self was found to be small and positive. On the other hand, contrary to the above studies, the study conducted by Lee and Lee (2019) revealed a strong positive correlation between Ought-to L2 Self and WTC.

According to the heterogeneity test, it was found that there was heterogeneity among studies included in the present meta-analysis study. To decide the reason of the heterogeneity, a categorical moderator analysis was determined to be performed. In accordance with the outcomes of the categorical moderator analysis, it was concluded that both publication type and study design categories did not significantly contribute to heterogeneity ($p > .05$). In other words, the cause for heterogeneity among studies did not result from publication type and research design.

Lastly, the publication bias of the effect size obtained for the Ought-to L2 Self variable was reviewed. Funnel Plot, Duval and Tweedie's Trim and Fill (Duval & Tweedie, 2000), Egger's Intercept Test (Egger et al., 1997), and Rosenthal's Fail-safe N (Rosenthal, 1979) tests were performed for publication bias. In accordance with the publication bias tests, two of the tests showed publication bias; whereas, the other two tests showed lack of publication bias for WTC and Ought-to L2 Self.

Implications

Considering the results, it can be said that anxiety affects the willingness to speak negatively, which was also confirmed in previous research (Peng & Woodrow, 2010; Yashima, 2002). Thus, when a student's anxiousness gets high, his/her WTC in English gets low. On the other side, a student who have a higher WTC can reduce his/her anxiousness. In this case, lowering the students' anxiety level will positively affect their WTC in a way, which

means they will be more enthusiastic about speaking. For this reason, it is necessary to control anxiety with the strategies and methods that instructors and teachers apply inside and outside the classroom. In addition, out-of-class activities should be organized to enable students to establish positive relationships among themselves so that they can control their anxiety while talking inside and outside the classroom. In an educational context, it can be concluded that a student's anxiety should be at a moderate level because if it is excessively high or excessively low, s/he might have problems in educational activities. It can be inferred from the study that the anxiety levels of students in Turkey were found to be moderate, which can be desirable if this anxiety is kept under control and well-managed. According to a study conducted by Baker & MacIntyre (2000), it was also found that anxiety is negatively correlating with WTC.

According to the results of the present study, the relationship between Motivation and WTC is positive. Even though it is at moderate level, students who are still highly motivated will be more willing to talk (Hashimoto, 2002), which shows the importance of motivation for students. Since motivation affects students' WTC in English, it also shows me that increasing students' motivation can help them communicate more in English. In the Turkish context, students acknowledge the importance of being able to speak English. They know that English will play an important role in their future. Therefore, it is very important for them to improve their English and speak English correctly. However, students may have problems improving their English due to lack of motivation. In addition, they may be insufficient in developing their speaking skills. It can be inferred that a lack of motivation will negatively affect the student's purpose in the language learning process. Therefore, instructors should help students develop positive feelings towards the target language and motivate them to speak more. Otherwise, they will be less motivated and unwilling to engage in English communication, leading to a lack of practice in speaking in the target language. For instance, teachers can find relevant topics for students to motivate them to speak. I remember a lecture where I was

trying to find a good topic to talk about, and I knew a few of my students also liked to talk about philosophy. I introduced them to a topic related to philosophy and realized that they talked more than they normally would because they were motivated. A student of mine stated that he liked this subject very much and was enthusiastic about talking about it. On the other hand, if students are not motivated, they would not be willing to speak.

In the Turkish context, teaching English mostly relies on students' comprehension skills rather than productive skills; therefore, students may encounter difficulties in developing their communication skills. Often, they cannot demonstrate what they have learned in a language class. One of the factors that lead to this situation is motivation. Necessary steps should be taken by educators, instructors, and teachers to find ways that can motivate students have desire to speak in the target language. On the other hand, it is also essential for students to motivate themselves. Expecting everything from others is also not a good solution. A student should learn what motivates him/her and increase his/her own motivation accordingly so that s/he can benefit from educational situations at the maximum level. We all know that as long as our motivation is high, we are more open to enjoying what we do and therefore learn more. In this respect, I have learned from this study that motivation is a significant predictor of students willingness to communicate so I should somehow make my students find ways to motivate themselves to speak. They can also speak English outside the classroom. In order to do this, they need to create opportunities that can motivate them to speak English.

Students can have both positive and negative attitudes towards being willing to speak English. There may be various reasons why students develop positive and negative attitudes towards speaking in the target language. Reasons for developing negative attitudes could be: dislike of the teacher or not having had good experiences speaking the target language. On the other side, some reasons for exhibiting a positive attitude may be: because students think that speaking in the target language is fun or because they think that speaking in the target

language is a necessity for their future careers. In this regard, it is important to help students build positive attitudes towards speaking in English. According to a study the research by Çetinkaya (2005), it was observed that there is a positive interrelationship between attitude and WTC. It can be inferred that students with positive attitudes toward speaking in English probably tend to be successful in improving their speaking skills, which is likely the definitive objective of numerous foreign language students. However, the majority of language students in Turkey do not have the opportunity to communicate in English outside of school, because the number of English-speaking people is small and only a limited number of students speak English during their university years, which they often do through student exchange programs. This might cause them to develop negative attitudes towards English. Therefore, students should be helped to develop positive attitudes toward learning English. In this case, educators should aim to improve students' attitudes. This can be achieved by encouraging students to find English-speaking friends online or it can be ensured that students meet a successful person whom they can take as a role model, and this person can help them to build a positive attitude towards speaking in the target language. Another thing that can be done is to bring students together with people from the target culture and allow them to get to know people from the target culture so that it is possible to see them as citizens of the world. In this case, it can be deduced that they will develop positive attitudes towards foreign languages and especially speaking in a foreign language.

According to Higgins (1987), “ideal self is your representation of the attributes that someone would like to possess” (p.320). Regarding the L2 context, “Ideal L2 Self refers to the L2 specific aspect of one's ideal self” (Dörnyei, 2005 p. 105). In the present research the correlation between WTC and Ideal L2 Self was found to be positive and moderate, which shows parallel results with Öz’s (2016) study. In this regard, it can be concluded that it is of good importance that students see themselves as willing to speak in the target language which

will help them to be motivated to have high WTC. For this reason, it is thought that teachers should adopt methods and strategies that will help their students develop their second language self-image and see themselves as good foreign language speakers. In this way, teachers can influence students' willingness to speak in the target language. If students have a good mental image of themselves as good and willing speakers of the target language, they will be more willing to speak in the target language, which will make them more enthusiastic and willing to speak in the target language.

In literature, Ought-to L2 Self refers to “the attributes that one believes one ought to possess (i.e., various duties, obligations, or responsibilities)” (Csizér & Dörnyei, 2005, p. 617). It corresponds to extrinsic motives (Dörnyei, 2005). In this regard, it is acknowledged that the opinions of others can affect students' academic life in the L2 context. Concerning the outcomes of the present meta-analysis, overall effect size was 0.074 which shows a small or can even be called “no relationship” between the two phenomena, which tells that the beliefs or thoughts of other people do not have any impact on students WTC. Under normal circumstances, we can think that people are greatly affected by the people around them; however, based on the present meta-analysis study, it has been revealed that students' Ought-to L2 selves do not affect their willingness to speak. Based on this inference, the importance of increasing a student's willingness to speak through that student has emerged.

Suggestions for Further Research

The present meta-analysis study was held with the appropriate studies related to the topic; a categorical analysis of the research design was done. For future studies, different categorical moderators can be investigated like gender, the level of proficiency in English, school level, and so on.

The present study consists of master's theses and doctoral theses conducted in the context of Turkey. For future research, articles on WTC and its predictors in the context of Turkey can be added to the selection of studies to be included in the meta-analysis.

This present correlational meta-analysis study investigated the interrelationship between WTC and Anxiety, Ideal L2 Self , Motivation, Attitude, and Ought-to L2 Self in the Turkish context. In total, 11 studies consisting of master's and doctoral theses were brought together to employ a correlational meta-analysis. For future research, different predictors of WTC such as emotional intelligence, communication competence, international posture, learning experience, L2 learning experience and so on can be investigated.

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APPENDICIES

Appendix A: Ethic Committee Approval of Çağ University

T.C	
ÇAĞ ÜNİVERSİTESİ	
SOSYAL BİLİMLER ENSTİTÜSÜ	
TEZ / ARAŞTIRMA / ANKET / ÇALIŞMA İZİNİ / ETİK KURULU İZİNİ TALEP FORMU VE ONAY TUTANAK FORMU	
ÖĞRENCİ BİLGİLERİ	
T.C. NOSU	
ADI VE SOYADI	Şafak UÇMAZ
ÖĞRENCİ NO	2020008002
TEL. NO.	
E - MAİL ADRESLERİ	
ANA BİLİM DALI	İngiliz Dili Eğitimi
HANGİ AŞAMADA OLDUĞU (DERS / TEZ)	Tez
İSTEKDE BULUNDUĞU DÖNEME AİT DÖNEMLİK KAYDININ YAPILIP-YAPILMADIĞI	2021 / 2022- GÜZ / BAHAR DÖNEMİ KAYDINI YENİLEDİM.
ARAŞTIRMA/ANKET/ÇALIŞMA TALEBİ İLE İLGİLİ BİLGİLER	
TEZİN KONUSU	Konuşma istekliliğini ve onu etkileyen 5 tane değişkenin arasındaki ilişkinin incelenmesi
TEZİN AMACI	Bir meta-analiz çalışması yaparak konuşma istekliliği ve onun değişkenleri arasındaki ilişkiyi daha kapsamlı olarak araştırıp anlamak.
TEZİN TÜRKÇE ÖZETİ	Bu çalışma, Türkçe öğrenenlerin İngilizce konuşma istekliliğini ve bunu etkileyen ideal ikinci dil benliği, olması gereken 2.dil benliği, motivasyon, tutum, anksiyete arasındaki ilişkiyi inceleyecektir. Çalışma bir meta-analiz araştırma tasarımı kullanacaktır. Nicel veriler 11 yüksek lisans ve doktora tezinden toplanmıştır. Elde edilen verilerin analizi, Kapsamlı Meta-Analiz (CMA) programı tarafından gerçekleştirilecektir.
ARAŞTIRMA YAPILACAK OLAN SEKTÖRLER/ KURUMLARIN ADLARI	

İZİN ALINACAK OLAN KURUMA AİT BİLGİLER (KURUMUN ADI- ŞUBESİ/ MÜDÜRLÜĞÜ - İLİ - İLÇESİ)			
YAPILMAK İSTENEN ÇALIŞMANIN İZİN ALINMAK İSTENEN KURUMUN HANGİ İLÇELERİNE/ HANGİ KURUMUNA/ HANGİ BÖLÜMÜNDE/ HANGİ ALANINA/ HANGİ KONULARDA/ HANGİ GRUBA/ KİMLERE/ NE UYGULANACAĞI GİBİ AYRINTILI BİLGİLER			
UYGULANACAK OLAN ÇALIŞMAYA AİT ANKETLERİN/ ÖLÇEKLERİN BAŞLIKLARI/ HANGİ ANKETLERİN - ÖLÇEKLERİN UYGULANACAĞI			
EKLER (ANKETLER, ÖLÇEKLER, FORMLAR, V.B. GİBİ EVRAKLARIN İSİMLERİYLE BİRLİKTE KAÇ ADET/SAYFA OLDUKLARINA AİT BİLGİLER İLE AYRINTILI YAZILACAKTIR)	1) (.....) Sayfa Ölçeği. 2) (.....) Sayfa Anketi. 3) (.....) Sayfa Formları. (.....) Sayfa	4)	
ÖĞRENCİNİN ADI - SOYADI: Şafak UÇMAZ	ÖĞRENCİNİN İMZASI: Enstitü Müdürlüğünde evrak aslı imzalıdır. TARİH: 26 / 05 2022		
TEZ/ ARAŞTIRMA/ANKET/ÇALIŞMA TALEBİ İLE İLGİLİ DEĞERLENDİRME SONUCU			
1. Seçilen konu Bilim ve İş Dünyasına katkı sağlayabilecektir.			
2. Anılan konu ikinci dil eğitimi faaliyet alanı içerisine girmektedir.			

Appendix B: Conversion table of Fisher's Z to Pearson's r (Cooper, 2010, as cited in Kanadh, 2019, p. 111).

Pearson's r	Fisher's Z
.000	.000
.050	.050
.100	.100
.148	.149
.196	0.199
.243	0.248
.287	0.295
.330	0.343
.371	0.390
.410	0.436
.447	0.481
.482	0.526
.514	0.538
.545	0.611
.573	0.652
.600	0.693
.625	0.733
.648	0.772
.669	0.809
.689	0.846
.707	0.881
.740	0.950
.768	1.015
.793	1.079
.814	1.139
.832	1.195
.848	1.249
.862	1.301
.874	1.350

Appendix C: Table of Critical Chi-Square Values (Retrieved from: <https://users.sussex.ac.uk/~grahamh/RM1web/ChiSquareTable2005.pdf>, as cited in Kanadlı, 2019, p. 112).

df	$p = 0.05$	$p = 0.01$	$p = 0.001$	df	$p = 0.05$	$p = 0.01$	$p = 0.001$
1	3.84	6.64	10.83	53	70.99	79.84	90.57
2	5.99	9.21	13.82	54	72.15	81.07	91.88
3	7.82	11.35	16.27	55	73.31	82.29	93.17
4	9.49	13.28	18.47	56	74.47	83.52	94.47
5	11.07	15.09	20.52	57	75.62	84.73	95.75
6	12.59	16.81	22.46	58	76.78	85.95	97.03
7	14.07	18.48	24.32	59	77.93	87.17	98.34
8	15.51	20.09	26.13	60	79.08	88.38	99.62
9	16.92	21.67	27.88	61	80.23	89.59	100.88
10	18.31	23.21	29.59	62	81.38	90.8	102.15
11	19.68	24.73	31.26	63	82.53	92.01	103.46
12	21.03	26.22	32.91	64	83.68	93.22	104.72
13	22.36	27.69	34.53	65	84.82	94.42	105.97
14	23.69	29.14	36.12	66	85.97	95.63	107.26
15	25	30.58	37.7	67	87.11	96.83	108.54
16	26.3	32	39.25	68	88.25	98.03	109.79
17	27.59	33.41	40.79	69	89.39	99.23	111.06
18	28.87	34.81	42.31	70	90.53	100.42	112.31
19	30.14	36.19	43.82	71	91.67	101.62	113.56
20	31.41	37.57	45.32	72	92.81	102.82	114.84
21	32.67	38.93	46.8	73	93.95	104.01	116.08
22	33.92	40.29	48.27	74	95.08	105.2	117.35
23	35.17	41.64	49.73	75	96.22	106.39	118.6
24	36.42	42.98	51.18	76	97.35	107.58	119.85
25	37.65	44.31	52.62	77	98.49	108.77	121.11
26	38.89	45.64	54.05	78	99.62	109.96	122.36
27	40.11	46.96	55.48	79	100.75	111.15	123.6
28	41.34	48.28	56.89	80	101.88	112.33	124.84
29	42.56	49.59	58.3	81	103.01	113.51	126.09
30	43.77	50.89	59.7	82	104.14	114.7	127.33
31	44.99	52.19	61.1	83	105.27	115.88	128.57
32	46.19	53.49	62.49	84	106.4	117.06	129.8
33	47.4	54.78	63.87	85	107.52	118.24	131.04
34	48.6	56.06	65.25	86	108.65	119.41	132.28
35	49.8	57.34	66.62	87	109.77	120.59	133.51
36	51	58.62	67.99	88	110.9	121.77	134.74
37	52.19	59.89	69.35	89	112.02	122.94	135.96
38	53.38	61.16	70.71	90	113.15	124.12	137.19
39	54.57	62.43	72.06	91	114.27	125.29	138.45
40	55.76	63.69	73.41	92	115.39	126.46	139.66
41	56.94	64.95	74.75	93	116.51	127.63	140.9
42	58.12	66.21	76.09	94	117.63	128.8	142.12
43	59.3	67.46	77.42	95	118.75	129.97	143.32
44	60.48	68.71	78.75	96	119.87	131.14	144.55
45	61.66	69.96	80.08	97	120.99	132.31	145.78
46	62.83	71.2	81.4	98	122.11	133.47	146.99
47	64	72.44	82.72	99	123.23	134.64	148.21
48	65.17	73.68	84.03	100	124.34	135.81	149.48
49	66.34	74.92	85.35				
50	67.51	76.15	86.66				
51	68.67	77.39	87.97				
52	69.83	78.62	89.27				

Appendix D: Coding Sheet**Study No:****1. Author:****2. Name of the study:****3. Year of the Study:****4. Publication type :**☐ Master Thesis ☐ Doctoral Dissertation**5. Research Design:**☐ Quantitative☐ Mixed Method**6. School Level**☐ Primary ☐ Secondary ☐ College ☐ University

Other(s) (Specify):

7. Sample Size:**8. Statistical Results (X S r):**

Inter-Coder Reliability											
Item Number	Study 1	Study 2	Study 3	Study 4	Study 5	Study 6	Study 7	Study 8	Study 9	Study 10	Study 11
1	1	1	1	1	1	1	1	1	1	1	1
2	1	1	1	1	1	1	1	1	1	1	1
3	1	1	1	1	1	1	1	1	1	1	1
4	1	1	1	1	1	1	1	1	1	1	1
5	1	1	1	1	1	1	1	1	1	1	1
6	1	1	1	1	1	1	1	1	1	1	1
7	1	1	1	1	1	1	1	1	0	1	1
8	1	1	1	1	1	1	1	1	1	1	1
Total Score	8	8	8	8	8	8	8	8	7	8	8
Agreement Rate	1	1	1	1	1	1	1	1	0.87	1	1
Agreement Rate(average)	0.98										

Appendix F: Çağ University Ethics Committee Request

T.C.
ÇAĞ ÜNİVERSİTESİ
Sosyal Bilimler Enstitüsü

Sayı : E-23867972-050.01.04-2200003990
Konu : Bilimsel Araştırma ve Yayın Etiği
Kurulu Kararı Alınması Hk.

27.05.2022

REKTÖRLÜK MAKAMINA

İlgi: 09.03.2021 tarih ve E-81570533-050.01.01-2100001828 sayılı Bilimsel Araştırma ve Yayın Etiği Kurulu konulu yazınız.

İlgi tarihli yazınız kapsamında Üniversitemiz Sosyal Bilimler Enstitüsü bünyesindeki Lisansüstü Programlarda halen tez aşamasında kayıtlı olan **Şafak Uçmaz** isimli öğrencimize ait tez evraklarının "Üniversitemiz Bilimsel Araştırma ve Yayın Etiği Kurulu Onayları" alınmak üzere Ek'te sunulmuş olduğunu arz ederim.

Prof. Dr. Murat KOÇ
Sosyal Bilimler Enstitüsü Müdürü

Ek : 1 adet öğrenciye ait tez evrakları dosyası.

Appendix G: Çağ University Ethics Committee Approval



T.C.
ÇAĞ ÜNİVERSİTESİ
Rektörlük

Sayı : E-81570533-044-2200004346
Konu : Bilimsel Araştırma ve Yayın Etiği
Kurul İzni Hk.

10.06.2022

SOSYAL BİLİMLER ENSTİTÜSÜ MÜDÜRLÜĞÜNE

İlgi : a) 02.06.2022 tarih ve E-23867972- 050.01.04-2200004106 sayılı yazınız
b) 02.06.2022 tarih ve E-23867972- 050.01.04-2200004089 sayılı yazınız
c) 27.05.2022 tarih ve E-23867972- 050.01.04-2200003993 sayılı yazınız
ç) 27.05.2022 tarih ve E-23867972- 050.01.04-2200003990 sayılı yazınız
d) 27.05.2022 tarih ve E-23867972- 050.01.04-2200003992 sayılı yazınız
e) 27.05.2022 tarih ve E-23867972-050.01.04- 2200003991 sayılı yazınız
f) 26.05.2022 tarih ve E-23867972- 050.01.04-2200003948 sayılı yazınız

İlgi yazılarda söz konusu edilen **Bahar Naz Alkan,Hatice Bozkurt Çanak,Umut İpek,Veli Sevil,Şafak Uçmaz,Tansu Ceren Özçelik,Latife Başak Harp,Havvanur Karlaelç ve İrem Şekerci** isimli öğrencilerimizin tez evrakları Bilimsel Araştırma ve Yayın Etiği Kurulunda incelenerek uygun görülmüştür.

Bilgilerinizi ve gereğini rica ederim.

Prof. Dr. Ünal AY
Rektör